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INSTALLATION RESTORATION PROGRAM
PHASE II—CONFIRMATION/QUANTIFICATION
STAGE 2
VOLUME II

APPENDICES
(A — U)

FINAL REPORT FOR:

TYNDALL AIR FORCE BASE
FLORIDA

TACTICAL AIR COMMAND
LANGLEY AIR FORCE BASE, VIRGINIA 23665

AUGUST 1988

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Prepared by:
ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
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Prepared for:
U.S. AIR FORCE TECHNICAL PROGRAM MANAGER
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U.S. AIR FORCE OCCUPATIONAL & ENVIRONMENTAL
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BROOKS AIR FORCE BASE, TEXAS 78235-5501

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APPENDIX A

RESUMES OF KEY PROJECT PERSONNEL

ESE PROFESSIONAL RESUME

JOHN D. BONDS, Ph.D.
Senior Scientist/Project Manager

SPECIALIZATION

Project Management, Atmospheric Chemistry, Water Chemistry, Industrial Hygiene, Quality Assurance, Hazardous Waste

RECENT EXPERIENCE

Initial Assessment for Hazardous Wastes at Army Installations, Team Leader--Comprehensive study at 48 Army installations to determine both past and present history with respect to the use of hazardous substances, quantities used, disposal methods and disposal sites. Also includes a current assessment of safety practices and compliance with regulations.

Initial Assessment Studies for the United States Air Force, Team Leader--Comprehensive studies at 2 Air Force bases to determine both past and present history with regard to the use and disposal of toxic and hazardous materials. Conducted in accordance with the Department of Defense Installation Restoration Program policies.

Initial Assessment Studies for the Naval Energy and Environmental Support Activity, Team Leader--Evaluating 2 Naval installations with regard to past hazardous waste generation, storage, treatment, and disposal practices. Investigations include records review, aerial and ground site surveys, employee interviews, and limited sampling and analysis including geophysical techniques. Determine extent of contamination at former disposal/spill sites, potential for contaminant migration, and potential effects on human health and the environment.

Phase II Confirmation Studies to Determine the Presence and Migration of Hazardous Wastes from Military Installations, Team Leader--Five comprehensive field studies to determine the actual sites where hazardous substances were used, their current concentrations in soils, surface waters and groundwater, and an assessment of the quantities which may migrate from the installation. The study also included recommendations for decontamination operations.

Determination of Hazardous Chemicals in Landfills, Project Manager--Several studies in which field sampling techniques and laboratory methods were developed to determine the existence and concentrations of explosive gases generated by landfill operations, priority pollutants escaping to the atmosphere and contaminating the groundwater.

Preparation of Quality Assurance Guidelines for EPA Project Officers, Project Manager--Preparation of QA guidelines for use by EPA project officers in selecting contractors for projects requiring sampling and analysis. Also included guidelines for quality assurance audits of the field sampling and analysis portion of any awarded contract. EPA publication 600/9-79-046 entitled Quality Assurance Guidelines for IERL-Ci Project Officers was produced under this project.

D-MR1AF.1/JDB-HZ.1
03/19/85

Air Compliance Testing of Industrial Sources, Project Manager--Various projects involving compliance testing at petroleum refineries, Kraft pulp mills, power plants, iron and aluminum smelting operations, and various other industries.

Ambient Air Monitoring, Project Manager--Various projects to determine ambient air concentrations of sulfur oxides, particulates, nitrogen oxides, carbon monoxide, photochemical oxidants, priority pollutant organics, and hydrocarbons.

EDUCATION

Ph.D.	1969	Analytical Chemistry	University of Alabama
B.S.	1963	Chemistry	University of Alabama

U.S. EPA Air Pollution Training Institute: Quality Assurance for Air Pollution Measurement Systems--workshop graduate (1977)

ASSOCIATIONS

American Chemical Society
American Industrial Hygiene Association
Air Pollution Control Association

REPORTS AND PUBLICATIONS

More than 50 reports and publications on Installation Assessments, source air emissions, hazardous materials and quality assurance.

D-MR1AF.1/JDB-HZ.2
03/19/85

RANDY L. SCHULZE, M.S.
Environmental Scientist

ESE PROFESSIONAL RESUME

SPECIALIZATION

Hazardous Waste Investigations, Aquatic Impact Assessment, Fisheries and Invertebrate Response to Resource Utilization, Aquatic Chemistry

RECENT EXPERIENCE

Hazardous Waste Records Search, Naval Air Station, Adak, Alaska, Task Manager—Project involved evaluation of past and present hazardous waste disposal practices on Naval Air Station Adak in Adak, Alaska. Responsible for evaluation of disposal practices for wastes from laboratories and medical facilities. Also contributed to final report.

Environmental Assessment of Titan Vehicle Launch Facility, Task Manager--Conducted analysis of ground water and surface water quality and quantity at Cape Canaveral Air Force Station. Also evaluated water quality and biological impacts associated with the reactivation of a Titan T34D/7 vehicle launch facility. Responsibilities included background data evaluation, impact analysis, and report preparation.

Cyanide Contamination Assessment, Staff Scientist--Assisted in evaluation of ground water and surface water contamination by cyanide from a photographic laboratory. Responsibilities included review of methodology and field sampling procedures, and evaluation of data to determine extent of contamination.

AMAX Pine Level Phosphase Mine, Enivornmental Impact Statement, Task Manager--Evaluated baseline water quality data and potential impacts associated with effluent discharge from a phosphate mining operation. Responsibilities included analysis of water quality data and significance of impacts. Also assisted in write-up of water quality section for final EIS document.

Evaluation of Toxicity of Inorganics in Leachate from Landfill, Project Manager--Evaluated chemical properties of a landfill leachate for toxicity to fish species. Responsibilities included project management, client interaction, and review of analytical data.

MX Missile Environmental Impact Study, Aquatic Ecologist--Evaluated likely impacts on aquatic environments associated with the deployment of the MX missile system. Responsibilities included review of existing ecological data and evaluation of likely impacts due to the project.

Dredge and Fill Permitting, Project Manager--Responsible for development of dredge and fill permit applications for federal and state agencies. Responsibilities included developing mitigation plans and permit applications, representing the interests of the client to the agencies, and coordinating client interaction.

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02/17/86

Predictive Water Quality Modeling Study of Major Reservoir in Texas, Project Manager--Conducted predictive modeling study to assess future water quality and trophic state conditions for a reservoir under construction. Major nutients, major ions, heavy metals and pesticide loading rates were calculated. Responsibilities included statistical data analysis, interpretation, and report preparation.

Continued Monitoring of Water Quality in Big Slough and Horse Creek Phosphate Mine Area, Aquatic Chemist--Conducted continued water quality monitoring and data analysis of surface water and ground water quality in creeks in Big Slough and Horse Creek Basins. Responsibilities included data analysis, interpretation, and report preparation.

Evaluation of the Effects of Shoreline Development on Benthic Invertebrate Communities, Task Manager--Evaluated the response by benthic invertebrate communities to varying degrees of shoreline development along finger canals.

EDUCATION

M.S.	1980	Environmental Engineering	University of Florida
B.S.	1976	Biology	University of South Florida

WILLIAM G. ELLIOTT, B.S.
Associate Geologist

ESE PROFESSIONAL RESUME

SPECIALIZATION

Geophysics, Stratigraphy, Engineering Geology, Hydrogeology, Ground Water Monitoring and Evaluation, Sampling Techniques.

RECENT EXPERIENCE

Adcom Wire Company, Jacksonville, Florida, Project Manager--Work included ground water contamination assessment and evaluation of remedial alternatives. Supervised chemical stabilization of contaminated soil, and developed and executed method involving EP Toxicity Test to isolate and neutralize lead contamination in soils of waste lagoon. Achieved closure of lagoon in accordance with RCRA, and managed negotiation of consent order with state regulatory agency.

Initial Assessment Study, U.S. Navy NEESA - NACIP, Team Geologist--Conducted initial assessment study of naval installations in Texas and Louisiana. Identified and evaluated potential sources of ground water/surface water contamination. Ranked sites for confirmation study using variation of MITRE model, and made recommendation for Phase II study of geohyrology of various sites.

Remedial Investigation, U.S. Army Toxic and Hazardous Materials Agency, Louisiana Army Ammunition Plant, Task Geologist--Developed geotechnical plan for remedial investigation. Evaluated site geohydrology and stratigraphy, and defined the extent and level of ground water contamination and impact on adjacent areas from disposal of explosive wastes at the four study sites.

Ground Water Contamination Study, Seymour Recycling, Seymour, Indiana, Project Geophysicist--Conducted downhole geophysical logging and aquifer evaluation testing at a former hazardous waste management facility. Performed aquifer characterization tests and borehole geophysics to evaluate migration potential of ground water contaminants at an uncontrolled hazardous wastesite.

Confirmation Study, U.S. Air Force IRP, Tyndall AFB, Panama City, Florida, Project Geologist--Developed technical operations plan for Phase II ground water and surface water confirmation study.

Contamination Assessment, Confidential Client, Project Geologist--Developed field sampling plan and site-specific methods for investigation of volatile organic contaminants (xylene) in unsaturated soils at an industrial site in Puerto Rico.

Ground Water Contamination Assessment, U.S. Army Toxic and Hazardous Materials Agency, Sharpe Army Depot, Stockton, California, Project Geologist/Geophysicist--During contamination assessment, supervised the installation of deep monitor wells and contaminant recovery wells,

D-MR1AF.2/WGE-HZ.1
02/15/86

performed downhole geophysical logging of monitor wells, and conducted aquifer tests.

Water Contamination Study, Polk County, Florida, Project Hydrogeologist--Investigated contamination of drinking water wells near Loughman, Florida. Responsibilities included supervising monitor well installation, aquifer testing, field sampling, contamination assessment report preparation, and recommendations for remedial actions.

U.S. Army Toxic and Hazardous Materials Agency, Vint Hill Farms Station, Virginia, Project Geologist/Geophysicist--During installation assessment, performed downhole geophysical logging and field sampling of monitor wells. Performed ground water and surface water sampling as part of the confirmation study.

Engineering Analyses, U.S. Navy, O.I.C.C. Trident, Kings Bay, Georgia, Project Geologist--Performed sedimentological and engineering analyses of channel sediments, calculated design contraints for dredged material containment area, and projected biological and water quality impacts from maintenance dredging of a submarine turning basin.

Land Survey, U.S. Navy, O.I.C.C. Trident, Kings Bay, Georgia, Project Geologist--Performed land survey to determine lateral and vertical extent of contamination of salt marsh by dredged material spill, collected and analyzed sediment cores to determine sediment source. Prepared field maps and graphics.

Carolina Galvanizing Corporation, Aberdeen, North Carolina, Project Geophysicist/Geologist--Performed computer modeling of ground water contaminant plume migration using water quality data. Also modeled pumping and treating of ground water to reduce levels of contaminants below applicable standards.

EDUCATION

	1982	Graduate courses in Geology	University of Florida
B.S.	1981	Geology	University of Florida

PROFESSIONAL ASSOCIATIONS

Geological Society of America
Southeastern Geological Society
American Water Resources Association

CERTIFICATIONS

1984--Certification of Training for Hazardous Waste Site Investigations.

1985--Certification of Training for Radiation Safety During Borehole Geophysical Logging.

D-MR1AF.2/WGE-HZ.2
02/15/86

MARK J. JORDANA, M.S.
Geologist

ESE PROFESSIONAL RESUME

SPECIALIZATION

Hydrogeology, Coastal Plain Stratigraphy, Marine and Terrestrial Contamination Assessments, Ground Water Monitoring and Evaluation, Geophysical Surveying

RECENT EXPERIENCE

Contamination Assessment, Amoco Facility, Port Everglades, FL, Field Team Leader and Co-Author--Conducted soil sampling survey across a 10-acre site to delineate the extent of contamination from waste oil reclamation and tank bottom discharge practices. One-hundred and six soil samples collected; analyses included volatile organics, priority pollutant metals, and polychlorinated biphenyls. Results used to assist client with the location of future construction plans on the property.

Contamination Assessment, Gulf Oil Company Service Station, Gainesville, FL, Project Manager--Coordinated and conducted field effort to install monitor wells, collect ground water samples. and conduct slug tests to evaluate aquifer characteristics. Analytical results from ground water samples were used to evaluate the extent of contamination and prepare recommendations for remedial action; senior author of final report.

Phase II Contamination Assessment, Camp Lejeune Marine Corps Base, Jacksonville, NC, Field Geologist--Conducted surface geophysical and subsurface geohydrologic investigations as part of the Department of Defense Installation Restoration Program (DOD-IRP). Work included soil-gas surveying; monitor well installation; and surface water, sediment, soil, and ground water sampling in an effort to identify and quantify the source and extent of specific contaminant occurrences.

Contamination Assessment of Ground Water at Martin Marietta Facility, Ocala, FL, Team Member--Produced computer maps of contaminant plume concentrations for volatile organics and various metals which occur in ground water underlying the site.

Phase II Contamination Assessment, Tyndall Air Force Base, Panama City, FL, Project Geologist/Field Team Leader--Performed surface geophysical and subsurface geohydrologic investigations as part of the DOD-IRP. Field work included electromagnetic conductivity surveying; monitor well installation; and surface water, sediment, soil, and ground water sampling in an effort to identify and quantify the source and extent of specific contaminant occurrences.

Contamination Assessment of Ground Water at General Electric Facility, Daytona Beach, FL, Team Member--Co-author of report which utilized soil-gas and ground water chemistry data to delineate the concentration and extent of a hydrogen cyanide contamination plume underlying the site.

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01/16/87

Contamination Assessment at Container Corporation of America Facility, Jacksonville, FL, Project Geologist/Field Team Leader--Work included electromagnetic conductivity surveying; soil sampling; and field and laboratory analysis for polycyclic aromatic hydrocarbons, cyanides, sulfides and volatile organics to delineate the extent of contamination produced by tank bottom discharge from a coal gasification facility previously located at the site. Senior author of final report.

Naturally Occurring Radioactivity in Ground Water Study, Project Manager and Senior Author--Key researcher for a study on the natural occurrence of radionuclides in ground water nationwide. This work, conducted for the U.S. Environmental Protection Agency (EPA); classified the relative risk of occurrence of uranium, radium-226, and radon for each of 3073 counties nationwide.

Contamination Assessment of Ground Water at Stoller Chemical Company Facility, Charleston, SC, Project Geologist/Field Team Leader--Work included aquifer testing to determine geohydrologic parameters at the site and monitor well installation and sampling to determine the extent and concentration of the contaminant plume in the subsurface. Co-authored final report, which was submitted to the S.C. Department of Health and Environmental Control (DHEC).

Wastewater Characterization Study, Savannah River Plant, Aiken, SC, Field Team Leader--Performed wastewater sampling at the Department of Energy's Savannah River Plant F and H area treblers. This project involved the design, installation, and sampling of flow-proportional, integrated samplers at both treblers. Samples were collected, packaged, and shipped off-plant to an analytical lab daily.

Regional Stratigraphic Analysis, Savannah River Plant, Aiken, SC, Project Geologist/Field Team Leader and Senior Author--Developed a data base of subsurface control for the off-plant region adjacent to the Savannah River Plant. The data base included geophysical well logs and auger descriptions from more than 500 locations in five counties of southwestern South Carolina. Constructed four cross-sections delineating the regional subsurface stratigraphy of the region.

Education

M.S.	1984	Geology	University of South Carolina
B.A.	1982	Geology	University of North Carolina at Wilmington

Continuing Education

Defining Formation Characteristics Using Well Logs, given by Schlumberger Educational Services, December, 1985.
REM III (Superfund) Health and Safety Training Seminar, November 1986

D-MR1GL.2/MJJ.2
01/16/87

DAVE W. KNOTHE
Staff Scientist/Project Manager

ESE
PROFESSIONAL RESUME

SPECIALIZATION

Project Management, Field and Laboratory Operations Management, Hazardous Waste, Environmental Health/Industrial Hygiene Project Coordination and Analytical Chemistry

RECENT EXPERIENCE

Confirmation Surveys for the U.S. Air Force Installation/Restoration Program, Task Manager—Analytical support and coordination of Stage 1 Investigations at Cape Canaveral Air Force Base as part of a task order contract to design and implement IRP Phase II Confirmation Surveys for OEHL. Surface waters, ground waters, soil borings and sediments are being sampled and analyzed for various screening parameters including total organic carbon (TOC), total organic halogens (TOX), phenols, oil and grease, pH, specific conductance, PCBs, and selected metals and pesticides. This study will include a characterization of the extent of contamination, contaminant migration modeling, risk assessment and evaluation of various remedial measures.

Contamination Survey, Longhorn Army Ammunition Plant, Marshall, Texas, Environmental Protection Systems, Inc., Project Chemist--Technical responsibilities included site inventory, analyses of ground water, surface water, soil and sediment sampling for priority pollutants and explosives. A ranking scheme was developed and engineering report with recommendations was prepared.

Contamination Survey, Lone Star Army Ammunition Plant, Texarkana, Texas, Environmental Protection Systems Systems, Inc., Project Chemist--Specific responsibilities included a site inventory, analyses of ground water, surface water, soil and sediment sampling for priority pollutants and explosives.

Water Quality Management Studies of Coffeeville, Reservoir, Tombigbee Waterway, Alabama, Environmental Protection Systems, Inc., Field and Laboratory Support Chemist--Sampling and analysis of water, sediments and organisms from 25+ stations in the Coffeeville Reservoir and the Tombigbee River and preparation of a report on the conditions and the effects of industrial discharges and dewatering at the Coffeeville Dam on water quality.

Monitoring Well/Lysimeter Sampling Program, Redstone Arsenal, Alabama, Environmental Protections Systems, Inc., Project Manager—Duties included development of a ground water monitoring program for quality assessment.

Hazardous Waste Stream Characterization, Pensacola Naval Air Station, Florida, Environmental Protection Systems, Inc. Project Manager--Analytical responsibility involved development of a statistically representative sampling program for wastewater sampling at the Naval Air Station.

Environmental Audit Program for a Marine Terminal Facility and Land Disposal Operation, Mississippi, Environmental Protection Systems, Inc., Project Manager—Involved with the design and implementation of a comprehensive audit program for an industrial site receiving miscellaneous drilling fluids.

Industrial Hygiene Surveys for Local, State and Federal Governments, Environmental Protection Systems, Inc., Project Manager--Industrial Hygiene Surveys for a wide range of hazardous materials.

EDUCATION

B.S.	1979	Chemistry	University of West Florida
B.S.	1977	Biology	University of West Florida

PROFESSIONAL AFFILIATION

The American Chemical Society
American Industrial Hygiene Association
The American Board of Industrial Hygiene (IHIT)

PUBLICATIONS

Knothe, D. 1982. Rapid Extraction of Explosives from Water for HPLC. In: Baker - 10 SPE Applications Guide, Vol. 1, J.T. Baker Chemical Co., Phillipsburg, NJ, p. 30.

Sanfilippo, R.D., McGriff, E.C., Knothe, D.W. and Jacobs, L. 1983. Longhorn Army Ammunition Plant Contamination Survey. Report Thiokol No. 16651 U.S. Army Toxic and Hazardous Agency, Aberdeen Proving Grounds, Maryland.

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03/26/87

ESE PROFESSIONAL RESUME

DILMA M. HALE, Ph.D.
Senior Associate Scientist

SPECIALIZATION

Inorganic Analysis; Atomic Absorption and Stripping Voltammetry, Organic Residue Analysis, Pesticide Residue and Environmental Fate; Gas Chromatography, Fluorometry

RECENT EXPERIENCE

Contamination Assessment of Hazardous Sites, Florida Department of Environment Regulation, Laboratory Coordinator--Scheduled sampling, analysis, and data reporting for hazardous sites, including: (1) Tri-City Oil site, Temple Terrace, Florida,--emergency analysis of soils and water contaminated by spills and leaks from storage tanks; (2) Peak Oil, Inc.,--sampling and analysis to delineate contamination from an oil recycling company; and (3) City of Belleview, Florida--analysis of samples contaminated by a leaking underground storage tank.

Water/Soil/Sludge Process Waste Treatment, Treatment Technology, Laboratory Coordinator--Responsibilities included monitoring project budget and schedule, and data management. Coordinated the total laboratory effort in the analysis and evaluation of lagoon sediments contaminated with munition compounds, including the determination of nitroaromatic compounds (TNT, 2,4-DNT and 2,6-DNT, RDX) and trace metals (Cd, Pb, Cr, Hg) in core sediments and leachates.

Kinetic Studies of 1,1-Dimethylhydrazine (UDMH), USATHAMA, Project Chemist--Investigated the stability and kinetics of the degradation of 1,1-dimethylhydrazine by high performance liquid chromatography (HPLC). Helped prepare final report for Army methods development project for U.S. Army Toxic and Hazardous Materials Agency.

Florida Department of Environmental Regulation, Emergency Overload and Response, Project Manager--Scheduled the sampling, analyses and data reporting for 18 tasks.

Methods of Treatment of Drinking Water, Project Chemist--Study included aeration and adsorption for pesticide removal. Report prepared for the Office of Drinking Water.

RTP Treatability Study, Laboratory Coordinator--Assessed the applicability of treatment processes to pesticide waste streams. Studied the effect of pH on the hydrolysis of prometon, linuron, methamyl, and 2,4-D. Also investigated the effect of chemical oxidants amd carried out kinetic studies.

Florida Acid Deposition Study, Project Chemist--Investigated the effects of acid deposition on materials.

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Pesticides Best Available Technology, Project Chemist--Prepared summary tables of pesticide and priority pollutant methods, wrote technical sections of major reports, edited and provided technical direction for reports to the U.S. Environmental Protection Agency.

Test Procedures for Pesticides in Effluents, Principal Investigator--Developed methods for the analysis of certain organochlorine and organotin pesticides using gas chromatography and atomic absorption spectrophotometry. Wrote project final report for U.S. Environmental Protection Agency.

Research Associate, University of New Hampshire, 1979 to 1980.

Involved in Anodic stripping voltammetric studies of Cd and Pb; conducted investigations of Cu-fulvic acid interactions, and Pb; investigations of Cu-fulvic acid interactions, and interferences by Ca, by ion-selective electrodes and ASV for University of New Hampshire.

Postdoctoral Research Associate, Carleton University, Ottawa, Canada, 1977 to 1978.

Studies included U(IV)- and U(VI)-organic acid interactions, by dialysis, ultrafiltration and gel filtration chromatography, using fluorometric determination for U; performed analysis of trace metals in a sea-water matrix using graphite furnace atomic absorption spectrometry.

Postdoctoral fellow, Institute of Environmental Science, University of Southern Mississippi, 1976 to 1977.

Investigated the fate of pentachlorophenol and its degradation products by GC and GC-MS. Developed analytical method involving derivatization with diazomethane to form the methyl esters and analysis by gas chromatography.

EDUCATION

Ph.D.	1976	Inorganic Environmental Chemistry	University of South Florida
M.S.	1971	Inorganic Chemistry	University of South Florida
B.A.	1968	Chemistry	College of Notre Dame

ASSOCIATIONS

American Chemical Society
Sigma Xi

PUBLICATIONS

Publications on Inorganic Chemistry, Residue Analysis, Trace Metals, and X-ray Crystallography

WILLIAM COULOMBE, B.S.
Quality Assurance Supervisor

ESE PROFESSIONAL RESUME

SPECIALIZATION

Quality Assurance (QA), Water Quality, Ambient Air Monitoring

RECENT EXPERIENCE

Effluent Study, Chevron U.S.A. Inc., Project Quality Assurance Supervisor--Study conducted at four port terminals in Florida. Reponsible for preparation and implementation of the project QA plan.

Confirmation Studies, U.S. NAVY Laboratory Quality Assurance Coordinator--Environmental monitoring to assess contamination at sites in Puerto Rico and Charleston, South Carolina. Responsible for overseeing proficiency testing, coordinating on-site QA/QC inspections, establishing QC procedures, processing control charts, monitoring compliance with the laboratory QA/QC plan, and preparing monthly QA/QC reports.

Pure Compound and Effluent Toxicity Tests, GLP Quality Assurance Unit, Quality Assurance Supervisor--Quality assurance supervisor for aquatic bioassay toxicity tests including static and flow-through tests, acute and chronic. Responsible for auditing tests and review of all final reports.

Detroit River Plume Study, Project Quality Assurance Supervisor--Performed water quality, dye study, bioassay testing for the City of Detroit. Responsible for preparation and implementation of the project QA plan.

Environmental Contamination Assessments and Preconstruction Survey, Project Quality Assurance--Survey performed for the Florida Department of Environment Regulation. Responsible for implementing the QA plan, including field and laboratory audits, and data validation.

Remedial Investigation/Feasibility Study, State of New Jersey, Project Quality Assurance Supervisor--Study conducted in Hudson County New Jersey. Responsible for preparation and implementation of the project QA plan.

Presurvey For Phase II Stage 2 Installation Restoration Program, Project Quality Assurance Supervisor--Environmental monitoring to assess contamination at Tyndall Air Force Pase and Panama City, Florida. Responsible for preparation and implementation of the project QA plan.

Contamination Assessment, Lockhaven, Pennsylvania, Project Quality Assurance Supervisor--Environmental monitoring and a hazardous waste site closure study conducted for American Chemical and Color Corporation, Lockhaven, Pennsylvania. Responsible for preparation and implementation of the project QA plan.

D-MR1AF.1/WC-EA.1
10/28/86

Analytical Services for a Pilot-Plant Testing Program to Evaluate the Effectiveness of Activated Carbon Adsorption Technology, Project Quality Assurance Supervisor—Analyses were performed for the U.S. Environmental Protection Agency using a mobile laboratory at the site of the pilot plant. Responsible for implementing the QA plan, conducting a field audit at the mobile laboratory, and data validation.

Pilot Study to Assess the Applicability of Treatment Processes to Pesticide Waste Streams, Project Quality Assurance Supervisor—Research and development study conducted for the U.S. Environmental Protection Agency. Responsible for implementing the project QA plan, conducting laboratory audits and data validation.

Determination of Organic Compounds Contributions to COD of Waste Effluent, Project Quality Assurance Supervisor--Research and development study on effluent from a pharmaceutical plant conducted for the U.S. Environmental Protection Agency. Responsible for implementing the project QA plan, conducting laboratory audits, and data validation.

Remedial Investigation/Feasibility Study, Confidential Client, Project Quality Assurance Supervisor--Surveys performed for the Florida Department of Environmental Regulation. Responsible for implementing the QA plan, including field and laboratory audits and data validation.

Landfill Environmental Monitoring Program, Project Quality Assurance Supervisor--Ground water and soil monitoring and analysis performed for the Alachua County Department of Environmental Services, Gainesville, Florida. Responsible for preparation and implementation of the project QA plan.

Contamination Assessment, Florida Power Corporation, Project Quality Assurance Supervisor--Study conducted in St. Petersburg, Florida. Responsible for preparation and implementation of the project QA plan.

EDUCATION

B.S.	1975	Zoology	University of Florida

D-MR1AF.1/WC-EA.2
10/28/86

KAREN T. BROWN, B.S.
Associate Scientist
Quality Assurance

ESE PROFESSIONAL RESUME

SPECIALIZATION

Quality Assurance, Laboratory Analysis, Analytical Coordination, Data Handling, Trace Metals Analysis, Gas Chromatography, Atomic/Emission Spectroscopy

RECENT EXPERIENCE

Specific experience includes data validation, QA audits, writing QA plans and reports; one year working experience in gas chromatography; atomic emission spectroscopy, with two years work experience in ICAPAES and DCPAES; and one year work experience in furnace and flame AA.

Associate Scientist, Quality Assurance (QA), (August 1986 to Present)--Responsible for data validation of many types of chemical and biological analyses; preparation of project QA plans and reports. Ultimate responsibility is to assure ESE data is of the highest quality.

Gate Lands, Project QA Supervisor--Feasibility study conducted in Jacksonville, Florida. Responsible for preparation and implementation of the project QA plan.

Installation Restoration Project, Phase II, Wake Island Air Field, Project QA Supervisor--Responsible for preparation and implementation of project QA plan.

Asbestos QA Plan--Responsible for preparation of ESE's generic asbestos QA plan.

Confirmation Studies, U.S. Navy--Environmental monitoring to assess contamination at sites in Puerto Rico and Charleston, South Carolina. Responsible for processing control charts, monitoring compliance with the laboratory QA/QC plan, and preparing monthly QA/QC reports.

Florida Acid Deposition Study, QA Supervisor--Responsible for introducing performance evaluation samples for field and lab analysts; and reporting results.

Acute Toxicity Studies, Chevron U.S.A., Inc., Project Quality Assurance Supervisor--Responsible for implementation of the project QA plan.

Toxicology QA Plan-- Responsible for updating ESE's generic toxicology QA plan.

D-MR1AF.2/KTB.1
01/16/87

Associate Scientist, Group Leader, Atomic Spectroscopy (January 1985 to August 1986)—Responsible for scheduling metals analysis and supervising five laboratory technicians. Knowledgeable in trace element analysis and data reduction of a wide range of sample matrices by AA and ICAP spectrophotometric techniques.

Rocky Mountain Arsenal, Environmental Program--Responsible for scheduling metals analysis, data evaluation, and analysis of samples by AA and ICAP Spectrophotometric techniques.

Florida/Maryland Acid Deposition Study—Responsible for trace metals portion of multi-year study investigating acid rain. Analyses performed using ICAPES and Flame Atomic Emission Spectroscopy.

St. Johns River Power Park Bioassay Test Program—Responsible for scheduling metals analysis, data evaluation, and analysis of samples by AA and ICAP spectrophotometric techniques. Developed oyster tissue digestion procedure for the analysis of copper.

Sharpe Army Depot Environmental Program—Determined quantatively As and Se by Furnace AA.

Westvaco-St. Johns Department, Lake City, Florida, Quality Control Chemist (February 1984 to January 1985)—Supervised QC Lab. Responsible for quality of raw materials and finished resin. Analyzed aliphatic and aromatic compounds by GC. Trained laboratory testers and technicians for routine physical testing of samples. Held monthly QA meetings.

Florida Citrus Commission, Gainesville, Florida, Student Lab Technician (May 1981 to August 1983)—Research project objective was to establish a criterion for distinguishing the geographical origin of orange juice by its mineral content. Responsible for analysis of orange juice for its trace metal content by DCPAES, AA, and ICAPAES. Also, responsible for data reduction and sample preparation.

EDUCATION

B.S.	1983	Chemistry	University of Florida

D-MR1AF.2/KTB.2
01/16/87

PATRICK A. RHOADS, B.A.
Chief Technician

ESE PROFESSIONAL RESUME

SPECIALIZATION

Aquatic Toxicity Testing, Aquatic and Terrestrial Ecology, Hazardous Waste Field Sampling--Ground Water, Soils, Sediments, Industrial Wastewater, and Storm Water Runoff

RECENT EXPERIENCE

Omnivest Remedial Study, Project Team Member--Involved drilling survey effort to determine the extent of contamination by unknown chemicals throughout a closed landfill. Responsible for field preparation, core sampling, sample preparation and shipping, and decontamination of equipment and personnel.

Phoenix Nike Site Pump Test, USATHAMA, Project Team Member--Work consisted of pump test to determine hydrogeology of project area to estimate extent of possible contamination onsite and offsite. Responsible for field preparation, monitor well sampling, sample shipment, and around-the-clock equipment monitoring.

Sampling Effort, Madison County, Florida, Project Team Member--Team member of a sampling survey of drums containing unknown chemicals found at the Madison County landfill. Responsible for field preparation, sampling, and decontamination.

USATHAMA Demonstration of Air Stripping Technology, Project Team Member--Pilot demonstration of air stripping technology for the treatment of ground water contaminated with trichloroethylene. Responsible for breakdown, repair, and maintenance of the air stripper system. Loading, transporting, and delivery of same to Sharpe Army Depot, CA. Set up and test the system and sampling during the pilot demonstration.

Organic Chemical Industry Study for EPA/EGD, Project Team Member--Development of BAT (1984) Effluent Guidelines Limitations for the organic chemicals industry. Responsible for field preparation, industrial wastewater sampling, sample preservation and shipping.

Ardmore Farms Remedial Study, Project Team Member--Survey effort to determine the extent of oil contamination in the sediments of a storm water runoff pond. Responsible for field preparation, surface water, and sediment core sampling and sample preparation.

NAVFAC Camp Le Jeune Confirmation Stuay, Project Team Member--Confirmation study of possible ground water contamination at Camp Le Jeune M.C.B., N.C. Responsible for ground water, soil, surface water, and sediment sampling, sample preparation and shipping.

D-MR1MS.2/PAR-HAZ.1
11/01/85

Storm Water Runoff Study, Confidential Client. Project Team Member--Confirmation study of contamination in storm water runoff for a confidential client in Gainesville, Florida. Responsible for storm water sampling and sample preparation.

Pharmaceutical Chemical Industry Study for EPA/EGD, Project Team Member--Development work for BCT. Effluent Guidelines Limitations for the pharmaceutical industry. Responsible for field preparation, industrial wastewater sampling, sample preservation, and shipping.

EDUCATION

BA	1975	Zoology	University of South Florida
Graduate Studies		Limnology	University of Florida
Hazardous Training Course			ESE

JOHN R. MAXWELL, B.A.
Ecologist

ESE
PROFESSIONAL RESUME

SPECIALIZATION

Biota Sampling for Hazardous Waste Assessment, Wildlife Resource Inventories, Vegetation Wildlife Habitat Mapping, Computer-Oriented Data Reduction, Photographic Documentation and Interpretation

RECENT EXPERIENCE

Field Team Leader, Aerial Photography Review and Biological Sample Collection--Toxic chemical deactivation project at Alabama Army Ammunition Plant, conducted for USATHAMA. Responsible for collection of mammalian, avian and vegetation samples for chemical analysis. Also collected soil, sediment, and ground and surface water samples.

Army Installation Restoration Project, West Virginia Ordnance Works, Team Member--Collected soil, stream and lake sediment, and water samples. Performed lab analysis for nitroaromatic compounds in soils.

Two Proposed Phosphate Mines in South Florida, Field Team Leader--Collected mammal and vegetation samples for laboratory analysis of radiation and Florida levels.

Ecological Survey of Proposed Power Plant, Site in Maryland, Field Team Leader--Conducted small and medium mammal trapping program to determine population estimates.

Aerial Photography Review, Aerial Survey, Small Mammal Trapping, and Endangered Species Survey--Surveys were conducted for siting a 300-MW coal-fired power plant in southern New Jersey.

EDUCATION

B.A.	1975	Biology	Trenton State College

D-MR1MS.2/JRM-MIL-HZ.1
09/24/85

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APPENDIX B

ANALYTICAL DATA FOR STATE OF FLORIDA PRIMARY AND SECONDARY DRINKING WATER STANDARDS FOR TYNDALL AFB SUPPLY WELLS

3... CSG/DEM/4

USAF HOSPITAL TYNDALL (TAC)

Tyndall Air Force Base, Florida

DRINKING WATER INVENTORY

JANUARY 1984

Prepared by:

Daniel R. Morton

DANIEL R. MORTON, 1LT, USAF BSC
Chief, Bioenvironmental Engineering

Reviewed by:

William R. Protzer

WILLIAM PROTZER, Capt, USAF, MC, FS
Chief, Aeromedical Services

Approved by:

Fred B. Goslin

FREDERICK GOSLIN, Colonel, USAF, MC, FS
Commander

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DRINKING WATER ANALYSES RESULTS

SUBSTANCE & EPA STANDARD FOR PUBLIC-COMMUNITY WATER SYSTEMS		BASE WATER SUPPLY - BAY COUNTY	WELL #1 AFESC Pavements Bldg 9705	WELL #2 Communications Bldg 722	WELL #2A Drone Launch Bldg 8523
Free Available Chlorine	0.2 mg/L	0.5mg/L	0.6mg/L		0.8mg/L
Fluoride	1.8mg/L	DEMWW regulated ±	3.4, 3.6, 3.95, 3.8*		1.35, 1.4, 1.85, 1.6*
pH	6.5 - 8.5	7.6	7.7		7.5
Coliform Bacteria	<4/100ml	<1/100ml	<1/100ml		<1/100ml
Arsenic	0.5mg/L	<10μg/L	<10μg/L		<10μg/L
Barium	1.0mg/L	<1000μg/L	<200μg/L		<1000μg/L
Cadmium	0.01mg/L	<10μg/L	<10μg/L		<10μg/L
Chromium	0.05mg/L	<50μg/L	<50μg/L		<50μg/L
Lead	0.05mg/L	<20μg/L	<20μg/L		<20μg/L
Mercury	0.002mg/L	<2μg/L	<2μg/L		<2μg/L
Nitrate (N)	10.0mg/L	<0.1mg/L	<0.1mg/L		<0.1mg/L
Selenium	0.01mg/L	<10μg/L	<10μg/L		<10μg/L
Silver	0.05mg/L	<10μg/L	<10μg/L		<10μg/L
Endrin	0.0002mg/L	<0.02μg/L	<0.2μg/L		<0.02μg/L
Lindane	0.004mg/L	<0.01μg/L	<0.1μg/L		<0.01μg/L
Methoxychlor	0.1mg/L	<0.2μg/L	<0.2μg/L		<0.20μg/L
Toxaphene	0.005mg/L	<1.0μg/L	<1.0μg/L		<1.0μg/L
2, 4-D	0.1mg/L	<0.02μg/L	<0.06μg/L		<0.06μg/L
2, 4, 5,-TP	0.01mg/L	<0.06μg/L	<0.06μg/L		<0.06μg/L
Total Trihalomethanes	0.1 mg/L	<100μg/L	N/A		N/A
Turbidity	1TU	<1 TU	<1 TU		<1 TU
Radium 226 & 228	5pCi/L	<5pCi/L	<5pCi/L		<5pCi/L
Gross Alpha	15pCi/L	<1pCi/L	<1pCi/L		<1pCi/L
Chloride	250mg/L	2.2mg/L	<20mg/L		20mg/L
Color	15 color units	7 units	<5 units		10 units
Copper	1mg/L	<20μg/L	<20μg/L		<20μg/L
Corrosivity	none	+2.26LI	-0.67LI		-0.83LI
Foaming Agents	0.5mg/L	<.1mg/L	<.1mg/L		<.1mg/L
Iron	0.3mg/L	<0.1mg/L	0.2mg/L		0.166mg/L
Manganese	0.05mg/L	<50μg/L	<50μg/L		<50μg/L
Odor	#3 Threshold Odor	None Detected	None		None
Sulfate	250mg/L	18mg/L	16mg/L		1mg/L
TDS	500mg/L	87mg/L	257mg/L		239mg/L
Zinc	5mg/L	233μg/L	<50μg/L		<50μg/L
Sodium	160mg/L**	4.8mg/L	34.4mg/L		12.3mg/L

±Ambient Fluoride from Bay Co. supplier - level maintained 0.9-1.2 (by CE) in base supply lines

*Indicates Repeat Samples

**State Standard - Primary

Attachment 5

DRINKING WATER ANALYSES RESULTS

SUBSTANCE & EPA STANDARD FOR PUBLIC-COMMUNITY WATER SYSTEMS		WELL #3 DRONE CONTROL -CLOSED- Bldg 8510	WELL #4 COMMISSARY STORAGE-CLOSED- Bldg 1502	WELL #4A AMMO STORAGE Bldg 7001	WELL #5 2021 COMM Bldg 652
Free Available Chlorine	0.2 mg/L			0.2mg/L	0.8mg/L
Fluoride	1.8mg/L			2.6, 3.0, 2.8, 2.75*	1.4mg/L
pH	6.5 - 8.5			7.7	6.9
Coliform Bacteria	<4/100ml			<1/100ml	<1/100ml
Arsenic	0.05mg/L			<10µg/L	<10µg/L
Barium	1.0mg/L			<1000µg/L	<200µg/L
Cadmium	0.01mg/L			<10µg/L	<10µg/L
Chromium	0.05mg/L			<50µg/L	<50µg/L
Lead	0.05mg/L			<20µg/L	<20µg/L
Mercury	0.002mg/L			<2µg/L	<1µg/L
Nitrate (N)	10.0mg/L			0.3mg/L	<0.1mg/L
Selenium	0.01mg/L			<10µg/L	<10µg/L
Silver	0.05mg/L			<10µg/L	<10µg/L
Endrin	0.0002mg/L			<0.02µg/L	<0.02µg/L
Lindane	0.004mg/L			<0.01µg/L	<0.01µg/L
Methoxychlor	0.1mg/L			<0.20µg/L	<0.20µg/L
Toxaphene	0.005mg/L			<1.0µg/L	<1.0µg/L
2, 4-D	0.1mg/L			<0.06µg/L	<0.06µg/L
2, 4, 5,-TP	0.01mg/L			<0.06µg/L	<0.06µg/L
Total Trihalomethanes	0.1 mg/L			N/A	N/A
Turbidity	1 TU			3.3 TU	<1 TU
Radium 226 & 228	5pCi/L			<5pCi/L	<5pCi/L
Gross Alpha	15pCi/L			3 ± 2pCi/L	2 ± 1pCi/L
Chloride	250mg/L			100mg/L	120mg/L
Color	15 color units			<5 units	10 units
Copper	1mg/L			<20µg/L	23µg/L
Corrosivity	None			-0.5LI	-0.45LI
Foaming Agents	0.5mg/L			<.1mg/L	0.45mg/L
Iron	0.3mg/L			1.766mg/L	0.487/0.543 mg/L *
Manganese	0.05mg/L			<50µg/L	<50µg/L
Odor	#3 Threshold Odor			None	None
Sulfate	250mg/L			89mg/L	22mg/L
TDS	500mg/L			636mg/L	444mg/L
Zinc	5mg/L			<0.50mg/L	<50µg/L
Sodium	160mg/L			143.2mg/L	27.7mg/L

*Indicates Repeat Samples

Attachment 5

DRINKING WATER ANALYSES RESULTS

SUBSTANCE & EPA STANDARD FOR PUBLIC-COMMUNITY WATER SYSTEMS	WELL #5A SALVAGE @ Bldg 6033	WELL #6 WHERRY HOUSING Bldg 2675	WELL #6A POL AREA @ Bldg 6055	WELL #7 FORMER COLD STORAGE Bldg 250
Free Available Chlorine 0.2 mg/L	0	0	2.7mg/L	0
Fluoride 1.8mg/L	1.8mg/L	1.4mg/L	0.4mg/L	7mg/L #
pH 6.5 - 8.5	7.8	8.2	6.8	7.1
Coliform Bacteria <4/100ml	<1/100ml	<1/100ml	<1/100ml	<1/100ml
Arsenic 0.05mg/L	<10μg/L	<10μg/L	<10μg/L	<10μg/L
Barium 1.0mg/L	<1000μg/L	<200μg/L	<1000μg/L	<200μg/L
Cadmium 0.01mg/L	<10μg/L	<10μg/L	<10μg/L	<10μg/L
Chromium 0.05mg/L	<50μg/L	<50μg/L	<50μg/L	<50μg/L
Lead 0.05mg/L	<20μg/L	<20μg/L	<20μg/L	<20μg/L
Mercury 0.002mg/L	<2μg/L	<1μg/L	<2μg/L	<1μg/L
Nitrate (N) 10.0mg/L	<0.1mg/L	<0.1mg/L	<0.1mg/L	<0.1mg/L
Selenium 0.01mg/L	<10μg/L	<10μg/L	<10μg/L	0.01μg/L
Silver 0.05mg/L	<10μg/L	<10μg/L	<10μg/L	0.05μg/L
Endrin 0.0002mg/L	<0.02μg/L	<0.02μg/L	<0.02μg/L	<0.02μg/L
Lindane 0.004mg/L	<0.01μg/L	<0.01μg/L	<0.01μg/L	<0.01μg/L
Methoxychlor 0.1mg/L	<0.20μg/L	<0.20μg/L	<0.20μg/L	<0.20μg/L
Toxaphene 0.005mg/L	<1.0μg/L	<1.0μg/L	<1.0μg/L	<1.0μg/L
2, 4-D 0.1mg/L	<0.06μg/L	<0.06μg/L	<0.06μg/L	<0.06μg/L
2, 4, 5,-TP 0.01mg/L	<0.06μg/L	<0.06μg/L	<0.06μg/L	<0.06μg/L
Total Trihalomethanes 0.1 mg/L	N/A	N/A	N/A	N/A
Turbidity 1 TU	<1 TU	<1 TU	4 TU	1 TU
Radium 226 & 228 5pCi/L	<5pCi/L	<5pCi/L	<5pCi/L	<5pCi/L
Gross Alpha 15pCi/L	2 ± 1.0pCi/L	2 ± 1.0pCi/L	1 ± 1.0pCi/L	2 ± 1.0pCi/L
Chloride 250mg/L	104mg/L	120mg/L	20mg/L	184mg/L
Color 15 color units	5 units	10 untis	10 units	<5 units
Copper 1mg/L	<20μg/L	<20μg/L	<20μg/L	<20μg/L
Corrosivity None	+.78LI	-0.5LI	-0.86LI	-1.30LI
Foaming Agents 0.5mg/L	<.1mg/L	<.1mg/L	<.1mg/L	<.1mg/L
Iron 0.3mg/L	0.586mg/L	0.396mg/L	1.608mg/L	<0.1mg/L
Manganese 0.05mg/L	<50μg/L	<50μg/L	<50μg/L	<50μg/L
Odor #3 Threshold Odor	None	None	None	None
Sulfate 250mg/L	29mg/L	30mg/L	1mg/L	83mg/L
TDS 500mg/L	401mg/L	480mg/L	253mg/L	624mg/L
Zinc 5mg/L	175μg/L	<50μg/L	87μg/L	30.1μg/L
Sodium 160mg/L	81.6mg/L	38.2mg/L	49.3mg/L	93.2mg/L

#One Sample Only - Pump Failure has prevented follow-up re-sampling

@Inactive as of 30 January 1984 according to DEMWW

Attachment 5

DRINKING WATER ANALYSES RESULTS

SUBSTANCE & EPA STANDARD FOR PUBLIC-COMMUNITY WATER SYSTEMS		WELL #7A BOY SCOUT AREA Bldg 3003	WELL #8 GOLF COURSE Bldg 3029	WELL #9 DRONE MAINTENANCE Bldg 9308	WELL #10 POL AREA Bldg 6065
Free Available Chlorine	0.2 mg/L	0	1.0mg/L	0.2mg/L	0.2mg/L
Fluoride	1.8mg/L	0.7mg/L	0.9mg/L	1.6mg/L	1.2mg/L
pH	6.5 - 8.5	7.7 units	7.7	7.5	7.5
Coliform Bacteria	<4/100ml	<1/100ml	<1/100ml	<1/100ml	<1/100ml
Arsenic	0.05mg/L	<10µg/L	<10µg/L	<10µg/L	<10µg/L
Barium	1.0mg/L	<200µg/L	<1000µg/L	<1000µg/L	<200µg/L
Cadmium	0.01mg/L	<10µg/L	<10µg/L	<10µg/L	<10µg/L
Chromium	0.05mg/L	<50µg/L	<50µg/L	<50µg/L	<10µg/L
Lead	0.05mg/L	<20µg/L	<20µg/L	<20µg/L	<20µg/L
Mercury	0.002mg/L	<1µg/L	<2µg/L	<2µg/L	<1µg/L
Nitrate (N)	10.0mg/L	<0.1mg/L	<0.1mg/L	<0.1mg/L	<0.1mg/L
Selenium	0.01mg/L	<10µg/L	<10µg/L	<10µg/L	<10µg/L
Silver	0.05mg/L	<10µg/L	<10µg/L	<10µg/L	<10µg/L
Endrin	0.0002mg/L	<.02µg/L	<0.02µg/L	<0.02µg/L	<0.02µg/L
Lindane	0.004mg/L	<.01µg/L	<0.01µg/L	<0.01µg/L	<0.01µg/L
Methoxychlor	0.1mg/L	<.20µg/L	<0.20µg/L	<0.20µg/L	<0.20µg/L
Toxaphene	0.005mg/L	<1.0µg/L	<1.0µg/L	<1.0µg/L	<1.0µg/L
2, 4-D	0.1mg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L
2, 4, 5.-TP	0.01mg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L	<0.06µg/L
Total Trihalomethanes	0.1 mg/L	N/A	N/A	N/A	N/A
Turbidity	1 TU	<1 TU	1 TU	1 TU	2 TU
Radium 226 & 228	5pCi/L	<5pCi/L	<5pCi/L	<5pCi/L	<5pCi/L
Gross Alpha	15pCi/L	3 ± 1pCi/L	2 ± 2pCi/L	3 ± 2pCi/L	4 ± 2pCi/L
Chloride	250mg/L	48mg/L	140mg/L	184mg/L	112mg/L
Color	15 color units	10 units	<5 units	<5 units	5 units
Copper	1mg/L	<20µg/L	<20µg/L	<20µg/L	<20µg/L
Corrosivity	None	-0.5LI	-0.4LI	-0.83LI	-0.63LI
Foaming Agents	0.5mg/L	<0.1mg/L	0.1mg/L	<0.1mg/L	<0.1mg/L
Iron	0.3mg/L	0.421mg/L	0.187mg/L	0.296mg/L	0.224mg/L
Manganese	0.05mg/L	<50µg/L	<50µg/L	<50µg/L	<50µg/L
Odor	#3 Threshold Odor	None	None	None	None
Sulfate	250mg/L	38mg/L	68mg/L	40mg/L	32mg/L
TDS	500mg/L	[illegible]mg/L	485mg/L	563mg/L	480mg/L
Zinc	5mg/L	157µg/L	<50µg/L	<50µg/L	<50µg/L
Sodium	160mg/L	35.4mg/L	72.6mg/L	106.2mg/L	73.2mg/L

Attachment 5

DRINKING WATER ANALYSES RESULTS

SUBSTANCE & EPA STANDARD FOR PUBLIC-COMMUNITY WATER SYSTEMS		WELL #11 ALERT FACILITY Bldg 106	WELL #12 PRIME BEEF Bldg 93XX		
Free Available Chlorine	0.2 mg/L	0.8mg/L	0		
Fluoride	1.8mg/L	2.4mg/L	2.8mg/L		
pH	6.5 - 8.5	7.6	7.8		
Coliform Bacteria	<4/100ml	<1/100ml	<1/100ml		
Arsenic	0.05mg/L	<10µg/L	<10µg/L		
Barium	1.0mg/L	<1000µg/L	<500µg/L		
Cadmium	0.01mg/L	<10µg/L	<10µg/L		
Chromium	0.05mg/L	<50µg/L	<10µg/L		
Lead	0.05mg/L	<20µg/L	<20µg/L		
Mercury	0.002mg/L	<2µg/L	<2µg/L		
Nitrate (N)	10.0mg/L	<0.1mg/L	<0.1mg/L		
Selenium	0.01mg/L	<10µg/L	<10µg/L		
Silver	0.05mg/L	<10µg/L	<10µg/L		
Endrin	0.0002mg/L	<0.02µg/L	<0.02µg/L		
Lindane	0.004mg/L	<0.01µg/L	<0.01µg/L		
Methoxychlor	0.1mg/L	<0.20µg/L	<0.20µg/L		
Toxaphene	0.005mg/L	<1.0µg/L	<1.0µg/L		
2, 4-D	0.1mg/L	<0.06µg/L	<0.06µg/L		
2, 4, 5,-TP	0.01mg/L	<0.06µg/L	<0.06µg/L		
Total Trihalomethanes	0.1 mg/L	N/A	N/A		
Turbidity	1 TU	1 TU	8 TU		
Radium 226 & 228	5pCi/L	<5pCi/L	<5pCi/L		
Gross Alpha	15pCi/L	4 ± 2pCi/L	<1pCi/L		
Chloride	250mg/L	259mg/L	48mg/L		
Color	15 color units	10 units	5 units		
Copper	1mg/L	47µg/L	<20µg/L		
Corrosivity	None	-0.1LI	#		
Foaming Agents	0.5mg/L	<0.1mg/L	#		
Iron	0.3mg/L	0.62mg/L	0.449mg/L		
Manganese	0.05mg/L	<50µg/L	<50µg/L		
Odor	#3 Threshold Odor	None	None		
Sulfate	250mg/L	36mg/L	5mg/L		
TDS	500mg/L	879mg/L	304mg/L		
Zinc	5mg/L	<50µg/L	77µg/L		
Sodium	160mg/L	221mg/L	37mg/L		

#Pump broken at this time; unable to collect samples. 9 December 1983

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APPENDIX C

SCOPE OF WORK AS OUTLINED BY OEHL

16 APR 1986

INSTALLATION RESTORATION PROGRAM
PHASE II - QUANTIFICATION (STAGE 2)
TYNDALL AFB, FLORIDA

I. DESCRIPTION OF WORK

The overall objective of the Phase II investigation is to define the magnitude, extent, direction and rate of movement of identified contaminants. A series of staged field investigations may be required to meet this objective. The contractor shall recommend any additional investigations required beyond this stage (Stage 2), including an estimate of costs.

The purpose of this task is to undertake a field investigation at Tyndall AFB FL (1) to determine the magnitude of contamination and the potential for migration of contaminants in the various environmental media; and (2) to identify potential environmental consequences and health risks of migrating pollutants based on State or Federal standards for those contaminants.

The Phase I and Phase II Stage 1 IRP Reports (mailed under separate cover) incorporated the background, description and previous work for the sites in this task, (except Zone 11, a new site). To accomplish this survey effort, the contractor shall take the following actions:

A. General

1. Well and Boring Installation

a. All groundwater monitoring wells shall be in accordance with the U.S. EPA Publication 330/9-81-002, NEIC Manual for Groundwater/Subsurface Investigations at Hazardous Waste Sites for monitoring well installation.

b. All drilling, development, purging, sampling and analytical methods must conform to State requirements. The contractor shall notify the state regulatory personnel as to the start date of field operations (drilling and sampling). This notification must be made as far in advance as possible.

c. Wells shall be of sufficient depth to collect samples representative of aquifer quality and to intercept contaminants if they are present. Wells drilled to intercept floating contaminants shall be screened approximately two feet above the groundwater elevation, where possible.

d. Wells shall be installed upgradient and/or downgradient of sites, as addressed in Item IB. If groundwater gradients are not clearly known at any site, sufficient 2 inch piezometers shall be used to determine the gradient, before monitoring wells are emplaced.

e. The contractor shall monitor all drilling operations with an OVA or similar instrument to identify potential generation of hazardous and/or toxic materials. In addition, the contractor shall monitor drill cuttings for discoloration and odor. During drilling operations, if soil cuttings are suspected to be hazardous (based on OVA measurements, odors, or discoloration), the contractor shall place them in new, contractor-supplied containers and test

them as specified in IA1g. All investigation-derived hazardous wastes, including any contaminated well development/purging water, shall be containerized for disposal by Tyndall AFB personnel. Results of this monitoring shall be included in the drilling logs.

f. Monitoring wells shall be installed using the following specifications:

(1) All new wells and borings shall be drilled using appropriate techniques. The contractor's on-site geologist shall select the drilling technique based on local geology and shall prepare drilling logs for all wells installed. Hollow-stem auger shall be used where applicable.

(2) Each well shall be constructed of 4-inch diameter Schedule 40 PVC casing except where otherwise specified. Each well shall be provided with a minimum of 10 feet of Schedule 40 mill slot screen the same diameter as the casing. Screens shall be installed to intercept the groundwater surface, with approximately two feet of screen above the water level where possible. Flush-joint threaded fittings shall be used exclusively (no glued fittings). Screens shall be capped at the bottom. The exact length of screen and slot size of screen shall be determined by the contractor's on-site geologist.

(3) Each well shall be sand packed with 8-12 mesh silica from the bottom of the well to the top of the screen. A bentonite seal, 1 foot minimum, shall be emplaced above the sand pack. Type I Portland cement grout shall be emplaced from the top of the bentonite to the ground surface.

(4) The well casing shall be cut off to provide a two- to three-foot stick-up, and a solid cap installed on the casing. A steel guard pipe four feet long shall be placed over the exposed casing and seated in the cement. A locking lid with lock shall be installed on the guard pipe. Steel guard posts, three-inch diameter and six feet long, shall be installed at three points around the well head. Casings shall be provided with vent/drain holes. A concrete pad shall be placed around each well and shall be sloped to drain away from the casing.

(5) Each well installed in a traffic area or any other area specified by the Tyndall AFB Point of Contact (POC) shall be installed with a flush completion. The PVC casing must be cut off below ground surface, a locking cap with lock provided, and a flat cover installed over the well head. No guard posts shall be installed around flush-completion wells.

(6) Each well shall be developed as soon as practical after completion by airlift, pumping, or bailing until the discharge water is clear and free of sediment to the fullest extent possible.

(7) The drilling rig and tools shall receive thorough initial cleaning and be decontaminated after each borehole. As a minimum, drill bits shall be steam cleaned, washed with clean water, and allowed to dry after each borehole is installed. Drilling shall proceed from the "least" to the "most" contaminated areas, if possible.

g. All cuttings shall be removed and the general area cleaned following the completion of each well and boring. Only those drill cuttings suspected as being a hazardous waste (based on discoloration, odor, or organic vapor detection instrument) shall be properly containerized (according to local civil engineering office requirements) by the contractor for eventual government disposal. The suspected hazardous waste shall be tested by the contractor for EP Toxicity. A maximum of ten EP Toxicity tests shall be performed. The contractor is not responsible for ultimate disposal of the drill cuttings. Disposal will be conducted by base personnel.

h. All wells shall be surveyed after installation is complete. Elevations shall be determined to the nearest 0.01 foot by surveying from the nearest USCGS or USGS benchmark. Horizontal location shall be determined to an accuracy of 1.0 foot. This information shall be recorded on the site maps.

i. Any borehole not completed as a monitoring well shall be abandoned by grouting from bottom to top with bentonite-cement grout. The contractor shall also evaluate all monitoring wells installed in IRP Phase II Stage 1 at Tyndall AFB and recommend the well abandonment technique to be used as each well is abandoned in the future. The abandonment of completed monitoring wells is not a part of this study.

j. The contractor shall install a maximum of 17 wells. Total footage shall not exceed 300 linear feet (including screens).

k. The exact location and number of monitor wells for each site shall be determined in the field by the contractor in consultation with the USAFOEHL and Tyndall AFB POCs. The approximate locations and recommended number of wells for sites under investigation are given in the site specific sections of the task.

2. Sampling, analysis and data collection shall be conducted as follows:

a. Water levels shall be measured at all monitoring wells as feet below the ground surface or below the top of casing elevation to the nearest 0.01 feet. Report in terms of mean sea level. Measure static water levels in wells prior to sampling at time of well development.

b. Wells shall be purged prior to sampling. Purging will be complete when three well volumes of water have been displaced or when the pH, temperature, specific conductance, color, and odor of the discharge are noted to stabilize. Conduct purging operations using a submersible pump where possible. Conduct all sampling using a ~~PVC~~ bailer. Any deviation from these procedures must be reported and explained in the monthly, draft and final reports.

Teflon

c. Soil samples shall be obtained from hollow-stem drilling operations through the use of split-spoon samplers. Samples shall be collected every five feet for visual classification.

d. Surface water/sediment samples are specified at several sites. One surface water sample and one sediment sample shall be obtained at each sample location specified. Samples shall be obtained so as to not cause cross-contamination; obtain downstream samples first, and obtain the water sample at each location before the sediment sample.

e. All sampling equipment, including components of sampling interface, shall be decontaminated prior to use, between samples, and between sampling locations to avoid cross-contamination. Sampling equipment and interface shall be thoroughly washed with a laboratory-grade detergent followed by clean water, solvent (methanol) and distilled water rinses. Sufficient time shall be allowed for the solvent to evaporate and the equipment to dry completely. The monofilament line or steel wire used to lower bailers into the well shall be dedicated to each well or discarded after each use. The calibrated water level indicator for measuring well volume and fluid elevation must be decontaminated before use in each well.

f. Locations where surface water or sediment samples are taken, or where soil exploratory borings are drilled shall be marked with a permanent marker, and the location marked on a project map of the site.

g. All water samples collected shall be analyzed on site by the contractor for pH, temperature, and specific conductance. Sampling, maximum holding time, and preservation of samples shall strictly comply with the following references: Standard Methods for the Examination of Water and Wastewater, 15th Ed. (1980), pp. 35-42; ASTM, Section 11, Water and Environmental Technology; Methods for Organic Chemical Analysis of Municipal Waters and Wastes, EPA Manual 600/4-82-057; and Methods for Chemical Analysis of Waters and Wastes, EPA Manual 600/4-79-020, pp. xiii to xix (1983). All chemical analyses (water and solid) shall meet the required limits of detection for the applicable EPA method identified in Attachment 1. Summarize sampling methods used, detection levels, and holding times in a table included in the Appendix of the draft and final reports.

h. The contractor shall split all water and soil samples. One set of samples shall be analyzed by the contractor and the other set of samples shall be delivered immediately (the same collection day) to the Tyndall AFB POC. The Tyndall POC will select 10% of the split samples for subsequent shipment and analysis and deliver them to the contractor within 24 hours of receipt. The contractor shall supply all packing and shipping materials for the Tyndall POC's use in packaging the split samples. The contractor shall accept from the Tyndall POC the packaged samples for immediate shipment (within 24 hours) through overnight delivery to:

USAFOEHL/SA
Bldg 140
Brooks AFB TX 78235-5501

The samples sent to the USAFOEHL/SA shall be accompanied by the following information:

(1) Purpose of sample (analyte)

(2) Installation name (base)

(3) Sample number (on containers)

(4) Source/location of sample

(5) Contract task numbers and title of project

(6) Method of collection (bailer, suction pump, air-lift pump, etc.)

(7) Volumes removed before sample taken

(8) Special conditions (use of surrogate standard, special nonstandard preservations, etc.)

(9) Preservatives used

Forward this information with each sample by properly completing an AF Form 2752 (copy of form and instruction on proper completion mailed under separate cover). In addition, copies of field logs documenting sample collection should accompany the samples.

Maintain chain-of-custody records for all samples, field blanks, and quality control duplicates.

i. The contractor shall collect and analyze an additional 10% of all samples, for each parameter, for field quality control purposes, as indicated in Attachment 1. Include internal quality control data (lab blanks, lab spikes, and lab duplicates) in the report, as well as field quality control data.

j. For those methods which employ gas chromatography (GC) as the analytical technique (i.e., E601, E602, E608, SW8010, SW8020, etc.), positive identification is required for all analytes having concentrations higher than the Method Detection Limit (MDL); confirm positive concentrations by second-column GC. Analytes which cannot be confirmed shall be reported as "Not Detected" in the body of the report. Include the results of all second-column GC confirmational analyses in the report appendix along with other raw analytical data.

Base the quantification of confirmed analytes upon first-column analysis. The maximum number of second-column confirmational analyses shall not exceed fifty percent (50%) of actual number of field samples (to include field QA/QC samples). The total number of samples for each GC method listed in Attachment 1 includes this allowance.

k. All raw data including QA/QC data and standards shall be archived at the prime contractor's laboratory for a period of not less than five years. Upon request, these data shall be supplied to the USAFOEHL.

3. Health and Safety

The contractor shall comply with USAF, OSHA, EPA, State and local health and safety regulations regarding the proposed work effort. Use EPA guidelines for designating the appropriate levels of protection at study sites. Prepare a written Health and Safety Plan for the proposed work effort and coordinate it directly with applicable regulatory agencies. Provide an information copy of the Health and Safety Plan to the USAFOEHL prior to commencing field operations (i.e., drilling and sampling).

B. In addition to items delineated in A above, conduct the following specific actions at sites specified on Tyndall AFB:

1. Zone 2 (Lynn Haven DFSP)

a. Install two monitoring wells, each approximately 15 feet deep, to replace previously installed wells LH-2-6 and LH 2-5.

b. Collect one surface water/sediment sample from the drainage ditch below the oil/water separator.

c. Collect one groundwater sample from each of the five existing and two new monitoring wells at the Zone.

d. Analyze each sample collected (seven groundwater and one surface water/sediment) for purgeable organics, petroleum hydrocarbons and lead.

2. Zone 5 (Small Arms Repair Area)

a. Collect one groundwater sample from each of the three existing monitoring wells at the Zone.

b. Analyze each sample collected for purgeable organics, acid extractable organics, and priority pollutant metals scan.

3. Zone 6 (Highway 98 Fire Training Area)

a. Install one upgradient monitoring well near the entrance to the site. Install one downgradient monitoring well, approximately 400 feet east of existing well T6-2. Each well shall be approximately 10 feet deep.

b. Obtain one groundwater sample from each well at the Zone, the three existing wells plus the two new wells. Analyze each sample (five total) for purgeable organics, acid extractable organics, petroleum hydrocarbons and lead.

4. Zone 7 (Southeast Runway Extension Burial Site)

a. Collect one groundwater sample from each of the three existing monitoring wells at the Zone. Collect one water sample from base well No. [illegible] at the Alert Facility.

b. Analyze each sample collected (4 total) for purgeable organics, base/neutral and acid extractable organics, and priority pollutants metals scan.

5. Zone 8 ("6000" Area Landfill)

a. Conduct a geophysical survey in the Zone, utilizing magnetometer techniques to define the extent of the landfill. Conduct a second geophysical survey using bulk ground conductivity techniques to attempt to define any leachate plume.

b. Based upon the results of the geophysical surveys, install one upgradient and one downgradient monitoring well at the Zone. Each well shall be approximately 15 feet deep.

c. Collect one groundwater sample from each well at the Zone, well T8-1 (existing) and the two new wells. Analyze each sample collected (three total) for purgeable organics, base/neutral and acid extractable organics, and priority pollutant metals scan.

6. Zone 9 (POL Area B)

a. Install one upgradient monitoring well, approximately 200 feet southwest of Tank 514. Install one downgradient monitoring well on the south side of Florida Avenue near the facility entrance. Each well shall be approximately 20 feet deep.

b. Collect one groundwater sample from each well at the Zone, wells 9-1 and 9-2 (existing) and the two new wells. Analyze each sample (four total) for purgeable organics, EDB, petroleum hydrocarbons and lead.

7. Zone 10 (Shellbank Fire Training Area)

a. Install one groundwater monitoring well upgradient of the site and two wells downgradient (between the site and Shoal Point Bayou). Each well shall be approximately 15 feet deep.

b. Collect one groundwater sample from each well at the Zone (three total) and analyze for purgeable organics, acid extractable organics, petroleum hydrocarbons and lead.

8. Zone 3 (POL Area A)

a. Install one upgradient groundwater monitoring well outside the facility fence to the west of the storage tanks. Install two downgradient monitoring wells within the fenced area between the tanks and Shoal Point Bayou. Each well shall be approximately 15 feet deep.

b. Collect one groundwater sample from each well at the Zone, the four existing wells and the three new wells. Analyze each sample (seven total) for purgeable organics, EDB, petroleum hydrocarbons and lead.

9. Zone 11 (Active Fire Training Area)

a. Install one upgradient monitoring well and two downgradient monitoring wells at the Zone. Each well shall be approximately 15 feet deep.

b. Emplace three soil borings in areas of visible soil contamination. Each boring shall be approximately 10 feet deep with split-spoon samples collected at 5-foot intervals. Select one soil sample per boring for analysis as specified below.

c. Collect two sets of surface water/sediment samples, one upstream of the oil/water separator and one at the effluent point.

d. Collect one groundwater sample from each monitoring well at the Zone.

e. Analyze each sample specified above (three soil, two surface water/sediment and three groundwater) for purgeable organics, acid extractable organics, petroleum hydrocarbons and lead.

C. Data Review

1. Tabulate field and analytical laboratory results, including field and laboratory parameters and QA/QC data, and incorporate them into the monthly R&D Status Reports. Forward them to the USAFOEHL for review as soon as they become available as specified in Item VI below. Field and laboratory parameters shall include times and dates of sample collection, extraction and analysis.

2. Upon completion of all analyses, tabulate and incorporate all results into an Informal Technical Information Report (Atch 1, Seq 3 as specified in Item VI below) and forward the report to USAFOEHL for review.

3. Data/results, generated throughout this undertaking, indicating a possibility of health risk (for example, contaminated drinking water aquifer) shall be reported immediately via telephone to the USAFOEHL program manager. Follow the telephone notification with a written notice and lab raw data (e.g. chromatograms, etc.) within three days.

D. Reporting

1. Technical Field Operations Plan: The contractor shall develop a Technical Field Operations Plan based upon the technical requirements for the proposed work effort. This plan shall be explicit with regards to field procedures. Include, but do not limit the plan to, field decontamination operations, sampling protocol, QA/QC field and laboratory procedures, field schedule, etc. A guideline for the plan is provided under separate cover. The plan shall be submitted before field operations begin, but no later than three weeks after date of contract award. Ten copies of the plan shall be submitted, as specified in Sequence 20, Item VI.

2. A draft report delineating all findings of this field investigation shall be prepared and forwarded to the USAFOEHL (as specified in Sequence 4,

Item VI below) for Air Force review and comment. This report shall include a discussion of the regional/site specific hydrogeology, well and boring logs, data from water level surveys, geophysical surveys, groundwater surface and gradient maps, water quality, sediment and soil analysis results, available geohydrologic cross sections, and laboratory and field quality assurance/ quality control information. The report shall follow the USAFOEHL supplied format (mailed under separate cover). The format is an integral part of this delivery order.

3. Results, conclusions and recommendations concerning the sites listed in this task which were produced in the technical report(s) of the previous staged work of IRP Phase II (mailed under separate cover), shall be used in the data reduction to plot any trends and arrive at the conclusions and recommendations of this effort's technical report (Sequence 4, Item VI below). The technical report of this effort shall be accomplished so that the report will reflect the combined up-to-date trend of each of the IRP Phase II sites listed herein.

4. The results section of the report shall include water, sediment and soil analyses results, field quality control sample data, internal laboratory control data (lab blanks, lab spikes, and lab duplicates), and laboratory quality assurance procedures. Provide second column confirmation results and include which columns were used, the conditions, and retention times. Summarize the specific collection techniques, analytical method, holding time, and limit of detection for each analyte (Standard Methods, EPA, etc.).

5. The recommendation section shall address each site and list sites by categories. Category I shall consist of sites where no further action (including remedial action) is required. Data for these sites are considered sufficient to rule out significant public health or environmental hazards. Category II sites are those requiring additional monitoring or work to quantify or further assess the extent of current or future contamination. Category III sites are sites that will require remedial actions (ready for IRP Phase III or IV actions). Recommendations for Category III sites shall include any possible influence on sites in Categories I and/or II due to their connection to the same hydrological system. Any dependency between sites in different categories shall be clearly stated. The contractor shall include a list of candidate remedial action alternatives including Long Term Monitoring (LTM) as remedial action and corresponding rationale, that, as a minimum, should be considered in selecting the remedial action for a given site. The list shall encompass alternatives that could potentially attain applicable environmental standards. For contaminants that do not have standards, the contractor may use EPA recommended safe levels for noncarcinogens (Health Advisory or Suggested-No-Adverse-Response Levels). If not specifically requested, comprehensive cost or technical analyses of alternatives shall not be included. However, in those situations where field survey data indicate immediate corrective action is necessary, the contractor shall present specific, detailed recommendations. For each category above, the contractor shall summarize the results of field data, environmental or regulatory criteria, or other pertinent information supporting conclusions and recommendations.

6. For those sites in need of additional Phase II effort, identify specific requirements for future monitoring needed to determine the magnitude, extent, and rate and direction of movement of detected contaminants. Identify potential environmental consequences of discovered contamination, where known. Provide estimates of costs by line items for any additional investigation beyond this stage along with estimates of time required to accomplish the investigation. Only the cost requirement of Sequence No 2 need be submitted as requested in paragraph VI below.

E. Meetings

The contractor's project leader shall attend two meetings to take place at times to be specified by the USAFOEHL. The meetings shall take place at Tyndall AFB for a duration of one day each.

II. SITE LOCATION AND DATES

Tyndall AFB FL
Date to be established

III. BASE SUPPORT

A. The Base Point of Contact (POC) will receive from the contractor the split samples and then select 10% of them, package them, and then deliver them back to the contractor within 24 hours for subsequent overnight shipment to USAFOEHL as stated in paragraph IA2h.

B. Base personnel will assign the disposal points within the installation of all hazardous and nonhazardous drill cuttings, contaminated groundwater, and contaminated sampling equipment.

C. Base personnel will designate an equipment staging area.

D. Base personnel will mark underground utilities where required.

E. Base personnel will designate an equipment decontamination area.

F. The base will provide space for trailer with access to telephone and electrical service.

IV. GOVERNMENT FURNISHED PROPERTY: None

V. GOVERNMENT POINTS OF CONTACT

1. USAFOEHL Monitor
Dee Ann Sanders
USAFOEHL/TS
Brooks AFB TX 78235-5501
AV 240-2158
(512) 536-2158

2. Base Monitor
1Lt William Shelton
USAF Hosp Tyndall/SGPB
Tyndall AFB FL 32403-5300
AV 970-4474
(904) 283-4474

3. MAJCOM Monitor
Col Jerry Dougherty
Hq TAC/SGPB
Langley AFB VA 23665-5001
AV 432-3322
(804) 764-3322

Extractables - EPA Methods 625 and 8270

Base/Neutral Extractables

Acenaphthene
Acenaphthylene
Anthracene
Aldrin
Benzo(a)anthracene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Benzo(ghi)perylene
Benzyl butyl phthalate
b-BHC
w-BHC
Bis(2-chloroethyl)ether
Bis(2-chloroethoxy)methane
Bis(2-ethylhexyl)phthalate
Bis(2-chloroisopropyl)ether
4-Bromophenyl phenyl ether
Chlordane
2-Chloronaphthalene
4-Chlorophenyl phenyl ether
Chrysene
4,4'-DDD
4,4'-DDE
4,4'-DDT
Dibenzo(a,h)anthracene
Di-n-butylphthalate
1,3-Dichlorobenzene
1,2-Dichlorobenzene
1,4-Dichlorobenzene
3,3'-Dichlorobenzidine
Dieldrin
Diethyl phthalate
Dimethyl phthalate
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-n-octylphthalate
Endosulfan sulfate
Endrin aldehyde
Fluoranthene
Fluorene
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachlorobutadiene
Hexachloroethane
Indeno(1,2,3-cd)pyrene
Isophorone
Naphthalene
Nitrobenzene
N-Nitrosodi-n-propylamine
PCB-1016
PCB-1221
PCB-1232
PCB-1242
PCB-1248
PCB-1254
PCB-1260
Phenanthrene
Pyrene
Toxaphene
1,2,4-Trichlorobenzene

Acid Extractables

4-Chloro-3-methylphenol
2-Chlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2-Methyl-4,6-dinitrophenol
2-Nitrophenol
4-Nitrophenol
Pentachlorophenol
Phenol
2,4,6-Trichlorophenol

Purgeable Organic Compounds - EPA Methods 601-602, 8010-8020, and 8240.

Benzene
Bromodichloromethane
Bromoform
Bromomethane
Carbon tetrachloride
Chlorobenzene
Chloroethane
2-Chloroethylvinyl ether
Chloroform
Chloromethane
Dibromochloromethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
trans-1,2-Dichloroethene
1,2-Dichloropropane
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethyl benzene
Methylene chloride
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene (TCE)
Trichlorofluoromethane
Vinyl chloride
ortho, meta and para xylene
(8020 only)

Acid Extractables (E604)

4-Chloro-3-methylphenol
2-Chlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2-Methyl-4,6-dinitrophenol
2-Nitrophenol
4-Nitrophenol
Pentachlorophenol
Phenol
2,4,6-Trichlorophenol

[f]Metals scan in water shall consist of an ICP scan for priority pollutant and other metals using E200.7 as follows:

Element	Estimated Detection Limit, mg/ℓ
Aluminum	0.050
Arsenic	0.060
Antimony	0.035
Barium	0.002
Beryllium	0.001
Boron	0.010
Cadmium	0.008
Calcium	0.045
Chromium	0.001
Cobalt	0.006
Copper	0.001
Iron	0.008
Lead	0.050
Magnesium	0.035
Manganese	0.002
Molybdenum	0.008
Nickel	0.010
Potassium	0.050
Selenium	0.090
Silica (SiO_2)	0.060
Silver	0.007
Sodium	0.030
Thallium	0.10
Vanadium	0.008
Zinc	0.003

plus method E245.1 for mercury, with a detection limit of 0.0002 mg/ℓ. Report all results as mg/ℓ.

[g]EP Toxicity in soil (contaminated drill cuttings) shall be determined using procedures specified in SW-846, Test Methods for Evaluating Solid Wastes, 2nd Ed.

[h]Total number of samples includes second-column confirmation on 50% of field samples (to include the field QC samples).

[a]Method references are as follows:

"E" Methods: (Water Only)	E100 through E500 Methods Methods for Chemical Analysis of Water and Wastes, EPA Manual 600/4-79-020 (USEPA, 1983)
	E600 Series Methods Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater USEPA Federal Register, Vol 49, No 209, 26 Oct 1984
	E200.7 Method Inductively Coupled Plasma-Atomic Emission Spectrometer Method for Trace Element Analysis of Water and Wastes USEPA Federal Register, Vol 49, No 209, 26 Oct 1984
"SW" Methods:	Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 2nd Edition (USEPA, 1984)

[b]Purgeable aromatic compounds shall be analyzed using method SW8020 at Zones 3 and 9 (fuel spill areas), so that xylene can be included among the analytes. All other analyses for purgeable aromatics shall be by method E602.

[c]Detection limits for all parameters analyzed by GC shall be as stated in the respective methods. Report results for organics in water as µg/ℓ; in soil as mg/kg. Positive identification is required for all analytes having concentrations higher than the method detection limit; confirm positive concentrations by second-column GC. Analytes which cannot be confirmed shall be reported as "Not Detected" in the body of the report. Include the results of both first and second-column data in the appendix of the report. Base the quantification of confirmed analytes upon the first-column analysis.

[d]Detection limits for all parameters analyzed by GC/MS shall be as stated in the respective methods. Report results for organics in water as µg/ℓ; in soil as mg/kg.

[e]Report results for metals in water as mg/ℓ; in soil as mg/kg. Report no more than two significant figures for any metals concentration.

ANALYTICAL METHODS, DETECTION LIMITS, AND NUMBER OF SAMPLES

WATER

PARAMETER	METHOD[a]	DETECTION LIMIT	NO. SAMPLES	QA	TOTAL SAMPLES
Purgeable Organic Compounds	E601 602	c	31	3	51[h]
	E601 SW5030/ SW8020[b]	c	11	1	18[h]
Base/Neutral and Acid Extractable Organic Compounds	E625	d	7	1	8
1,2-Dibromoethane (EDB)	E502.1	c	11	1	18[h]
Acid Extractable Organics	E604	c	16	2	27[h]
Petroleum Hydrocarbons	E418.1	100µg/ℓ	32	3	35
Lead	E239.2	0.005 mg/ℓ[e]	32	3	35
Priority Pollutant Metal Scan	E200.7 E245.1	f	10	1	11

SOILS

PARAMETER	METHOD[a]	DETECTION LIMIT	NO. SAMPLES	QA	TOTAL SAMPLES
Purgeable Organic Compounds	SW5030/ SW8240	d	6	1	7
Petroleum Hydrocarbons	SW3550/ E418.1	100mg/kg	6	1	7
Lead (Pb)	SW3050/ SW7420	50mg/kg[e]	6	1	7
EP Toxicity	SW-846	g	10	1	11

Attachment [illegible]

VI. In addition to sequence numbers 1, 5, and 11 in Attachment 1 to the contract, which are applicable to all orders, the sequence numbers listed below are applicable to this order. Also shown are data applicable to this order.

Sequence No.	Para No.	Block 10	Block 11	Block 12	Block 13	Block 14
20 (TOP)	ID	OTIME	86 JUN 30	86 JUL 1		10
7 (Health & Safety)	IA3	OTIME	86 JUN 30	86 JUL 1		3
3 (Prelim Data)	IC2	OTIME	**	**		3
2 (Cost)	ID6	OTIME	87JAN09	87OCT09		3
4 (Tech Report)	ID	ONE/R	86 DEC09	87 JAN09	87 OCT09	*
14		MONTHLY	86 JUL 9	86 JUL 10	***	3
15		MONTHLY	86 JUL 9	86 JUL 10	***	3

*Two draft reports (25 copies of each) and one final report (50 copies plus the original camera ready copy) are required. Incorporate Air Force comments into the second draft and final reports as specified by the USAFOEHL. Supply the USAFOEHL with a final copy of the first draft, second draft, and final reports for acceptance prior to distribution. Distribute remaining 24 copies of each draft report and 49 copies of the final report as specified by the USAFOEHL.

**Upon completion of the total analytical effort before submission of the first draft report.

***Submit monthly hereafter.

ANALYSES BY ZONE - TYNDALL AFB

ANALYTE	WATER ZONE 2	WATER ZONE 5	WATER ZONES 6	WATER ZONE 7	WATER ZONE 8	WATER ZONE 9	WATER ZONE 10	WATER ZONE 3	WATER ZONE 11		SOLID ZONE 2	SOLID ZONE 11
PURGEABLE ORGANICS (E601&602)	8	3	5	4	3		3		5			
PURGEABLE ORGANICS (E601&SW8020)						4		7				
PURGEABLE ORGANICS (SW8240)											1	5
BASE/NEUTRAL AND ACID EXTRACTABLE ORGANICS (E625)				4	3							
ACID EXTRACTABLE ORGANICS (E604)		3	5				3		5			
EDB						4		7				
PETROLEUM HYDROCARBONS	8		5			4	3	7	5		1	5
LEAD	8		5			4	3	7	5		1	5
PRIORITY POLLUTANT METAL SCAN		3		4	3							

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APPENDIX D

QUALITY ASSURANCE PLAN

QUALITY ASSURANCE REPORT
INSTALLATION RESTORATION PROGRAM
PHASE II, STAGE 2
TYNDALL AIR FORCE BASE, FLORIDA

Prepared for:

R. SCHULTZ
ESE Project Manager

Prepared by:

W. COULOMBE
ESE Project QA Supervisor

ESE. No. 86-378-0700-2140

March 1987

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1.0 INTRODUCTION

This report contains results of QA audits conducted during Phase II, Stage 2 activities conducted at Tyndall AFB, Florida. A QA supervisor was assigned to this project from ESE's independent QA Division to monitor the project from initiation to preparation of the final report. A simplified description of the distinction between QA and QC at ESE is as follows:

1. QC procedures comprise a portion of the total integrated QA program and are performed routinely by laboratory analysts/field personnel to obtain a prescribed standard of performance (e.g., calibration of instruments), and
2. QA procedures include a system of checks to verify the QC by an independent auditor (e.g., audit the calibration procedure).

A summary of the QA activities performed for the project is as follows:

1. Pre-sampling system audit;
2. Field audit;
3. Laboratory systems audit; and
4. Data validation of analytical field groups TYNDL1, TYNDL2, TYNDL3, TYNDL4, TYNDL5, TYNDL6, TYNDL7, and TYNDLS.

2.0 QUALITY ASSURANCE AUDITS

A pre-sampling systems audit was performed on Oct. 6, 1986, through a meeting with the project manager, laboratory coordinator, field team leader, and project QA supervisor. The Technical Operations Plan (TOP) was reviewed with these key project members to assure that the procedures described in the manual would be implemented.

A QA field audit was performed on Oct. 16, 1986 by the project QA supervisor. Ground water sampling was observed at the following wells:

Well Designation	Sample No.
T3-4	TYNDL6*4
T8-1	TYNDL5*5
T6-1	TYNDL4*1
T6-2	TYNDL4*2
T6-3	TYNDL4*3

Well development was observed at Well T6-5.

All observed field activities were consistent with TOP and standard ESE practice, with two exceptions:

1. The plan states that new monitoring wells will be allowed to equilibrate for no less than 14 days after well development (pg. 4-12). A 5-day minimum equilibration time was actually being used. According to the Site Geologist, the change was approved by the Air Force.
2. Field notes were being recorded in pencil during the ground water monitoring. The field team leader was informed that ink was required and the field crew immediately switched to using pen.

A laboratory systems audit was performed Jan. 23, 1987, to determine if the custody procedures from field to laboratory were consistent with the requirements of the TOP. Results of the review indicated acceptable custody documentation procedures. Standard custody procedures include the following activities.

The field team sampler or leader documents the sample fraction collected and time and date of collection onto a chain-of-custody logsheet, which is routed with the samples to the laboratory. The laboratory coordinator or designate checks in the samples and assures that all samples on the logsheet have been received. A QA Supervisor verifies that the chain-of-custody documentation and keypunching of sample site collection dates and times are correctly entered into the computer system.

3.0 QA DATA VALIDATION

QA data validation consists of the following:

1. Selection of a portion of the reported values at random and tracing through the raw data to assure that all calculations are free of errors, and the documentation of all raw data is adequate to support the reported values;
2. Verifying that all samples were analyzed within contract required holding times;
3. Verifying that instruments were properly calibrated;
4. Verifying that method blanks, standard matrix spike duplicates, sample matrix spikes, and references are analyzed at the required frequency and meet standard ESE acceptance criteria; and
5. Verify that the analytical methods employed were consistent with contract requirements.

As part of ESE's standard QC program, the following procedures are followed:

1. Samples are analyzed according to contract requirements;
2. Each analytical lot contains three standards and one calibration blank and has a correlation coefficient $\geq$0.995 except for GC/MS and ICAP analysis, where a one-point standardization is used;
3. Each analytical lot contains one control spike and replicate spike per 20 samples and one sample spike per 20 samples except for GC/MS analysis, where surrogate compounds are spiked into all samples, QC samples are analyzed, and a frequency of one control spike and sample spike per 20 samples are analyzed; and
4. Data reduction and reporting are free of errors, and reported values are supported by the raw data.

Field QA samples are part of the field sampling effort. Blind duplicate samples were collected at a frequency of 10 percent of all the samples

collected with the same matrix during a field effort. QA procedures employed for field QA samples were to assure that the duplicates were collected at the required frequency and to investigate discrepancies found in sample duplicates.

Tracing through the raw data (Item 1) revealed no calculation errors, and the reported values were adequately supported by the raw data. Instruments employed in the analyses were properly calibrated (Item 3) in accordance with EPA requirements and the analytical methods employed met contract requirements (Item 5).

Sample holding times (Item 2) were determined and compared to the current maximum holding times specified by EPA (see Table 3-1) (Federal Register, Vol. 49, No. 209, October 26, 1984, revised Vol. 50, No. 3, January 4, 1985). These EPA holding time requirements apply to water samples only; however, ESE uses the time as a goal for analysis of soil samples.

All water samples were analyzed within holding times except the volatile fraction (GC) of sample TYNDL6*8 had to be re-injected due to carry-over from a previous sample (see Table 3-2). The re-injection was performed 2 days after the 14-day holding time. Resampling was not warranted because additional data for this sample is available for sample TYNDL6*5 (a field duplicate) and the second column analysis (see Table 3-3), both run within holding times.

All soil samples were analyzed within the holding time goals except the petroleum hydrocarbon fraction for samples TYNDL7*1,*2 which exceeded the 28-day holding time by 1 day. EPTOX holding times were assessed by applying the water holding times to the leachate. All samples were analyzed within holding times except the herbicide fraction which exceeded the 7-day extraction holding time by 2 days.

Table 3-1. EPA Holding Times for Parameters Analyzed During the Tyndall AFB Phase II Stage 2 Study

Parameter	EPA Holding Times
Hydrocarbons	28 days
Metals except Hg	6 months
Hg	28 days
624 compounds	14 days
601/602 compounds	14 days
625 compounds	7 days to extraction 40 days after extraction
EDB	14 days
608	7 days to extraction 40 days after extraction
Herbicides	7 days to extraction 40 days after extraction

Table 3-2. Holding Times for Tyndall Analytical Data

Sample Number(s)	Parameters(s)	Collection Date	Extraction Date	Analysis Date	No. of Days
TYNDL1*1	hydrocarbons	10/15/86	—	11/12/86	28
TYNDL1*1	Pb	10/15/86	—	11/25/86	41
TYNDL1*1	SW 8240	10/15/86	—	10/23/86	8
TYNDL1*2,3	hydrocarbons	10/16/86	—	11/12/86	27
TYNDL1*2	Pb	10/16/86	—	11/25/86	40
TYNDL1*2,3	SW 8240	10/16/86	—	10/24/86	8
TYNDL1*3	Pb	10/16/86	—	01/22/87	98
TYNDL2*1-4,9	601/602	10/14/86	—	10/21/86	7
TYNDL2*1-4,9	hydrocarbons	10/14/86	—	10/29/86	15
TYNDL2*1-3,9	Pb	10/14/86	—	11/25/86	42
TYNDL2*4	Pb	10/14/86	—	10/29/86	15
TYNDL2*5,7,8	601/602	10/22/86	—	10/29/86	7
TYNDL2*5,7,8	hydrocarbons	10/22/86	—	11/06/86	15
TYNDL2*5,7,8	Pb	10/22/86	—	11/25/86	34
TYNDL3*1-4	601/602	10/13/86	—	10/22/86	9
TYNDL3*1-4	604	10/13/86	10/15/86	10/20/86	2/7
TYNDL3*1-4	ICAP Batch 34962	10/13/86	—	11/23/86	41
TYNDL3*1-4	ICAP Batch 35477	10/13/86	—	01/14/87	92
TYNDL3*1-4	Hg	10/13/86	—	10/30/86	17
TYNDL4*14,15	601/602	10/14/86	—	10/23/86	9
TYNDL4*14,15	604	10/14/86	10/20/86	11/04/86	6/15
TYNDL4*14,15	hydrocarbons	10/14/86	—	10/28/86	14
TYNDL4*14,15	Pb	10/14/86	—	11/25/86	42
TYNDL4*1-3	601/602	10/16/86	—	10/27/86	11
TYNDL4*1-3	604	10/16/86	10/20/86	11/04/86	4/15
TYNDL4*1-3	hydrocarbons	10/16/86	—	10/29/86	13
TYNDL4*1-3	Pb	10/16/86	—	11/25/86	40
TYNDL4*7-13	601/602	10/20/86	—	10/28/86	8
TYNDL4*7-13	604	10/20/86	10/24/86	11/06/86	4/13
TYNDL4*7-13	hydrocarbons	10/20/86	—	10/24/86	4
TYNDL4*7-13	Pb	10/20/86	—	11/25/86	36
TYNDL4*4,5	601/602	10/21/86	—	10/29/86	8
TYNDL4*4,5	604	10/21/86	10/24/86	11/06/86	3/12
TYNDL4*4,5	hydrocarbons	10/21/86	—	10/26/86	5
TYNDL4*4,5	Pb	10/21/86	—	11/25/86	35

Table 3-2. Holding Times for Tyndall Analytical Data (Continued, Page 2 of 3)

Sample Number(s)	Parameters(s)	Collection Date	Extraction Date	Analysis Date	No. of Days
TYNDL5*9,2	601/602	10/09/86	—	10/21/86	12
TYNDL5*9,2	625	10/09/86	10/10/86	11/06/86	1/27
TYNDL5*9,2	ICAP Batch 34962	10/09/86	—	11/23/86	45
TYNDL5*9,2	Hg	10/09/86	—	11/05/86	27
TYNDL5*9,2	As, Be	10/09/86	—	01/14/87	93
TYNDL5*1,3,4	601/602	10/10/86	—	10/21/86	11
TYNDL5*1,3,4	625	10/10/86	10/10/86	11/06/86	0/26
TYNDL5*1,3,4	ICAP Batch 34962	10/10/86	—	11/23/86	44
TYNDL5*1,3,4	Hg	10/10/86	—	11/05/86	26
TYNDL5*1,3,4	As, Be	10/10/86	—	01/14/87	96
TYNDL5*5	601/602	10/16/86	—	10/27/86	11
TYNDL5*5	625	10/16/86	10/21/86	11/10/86	5/20
TYNDL5*5	ICAP	10/16/86		02/23/87	129
TYNDL5*5	Hg	10/16/86	—	11/12/86	27
TYNDL5*6,8	601/602	10/17/86	—	10/27/86	10
TYNDL5*6,8	625	10/27/86	10/21/86	11/10/86	4/19
TYNDL5*6,8	ICAP	10/17/86		02/23/87	128
TYNDL5*6,8	Hg	10/17/86	—	11/12/86	26
TYNDL5*7	601/602	10/23/86	—	11/01/86	9
TYNDL5*7	625	10/23/86	10/27/86	11/09/86	4/13
TYNDL5*7	ICAP	10/23/86		12/01/86	39
TYNDL5*7	Hg	10/23/86	—	11/19/86	27
TYNDL6*9,10	601/602	10/13/86	—	10/22/86 (neat) 10/27/86 (diluted)	14
TYNDL6*9	hydrocarbons	10/13/86	—	10/22/86	9
TYNDL6*10	hydrocarbons	10/13/86	—	10/30/86	17
TYNDL6*9,10	EDB	10/13/86	—	10/27/86	14
TYNDL6*9,10	Pb	10/13/86	—	11/25/86	43
TYNDL6*1-3	601/602	10/15/86	—	10/27/86	12
TYNDL6*1-3	hydrocarbons	10/15/86	—	10/30/86	15
TYNDL6*1-3	EDB	10/15/86	—	10/27/86	12
TYNDL6*1,2	Pb	10/15/86	—	11/25/86	41
TYNDL6*3	Pb	10/15/86	—	12/12/86	58
TYNDL6*4	601/602	10/16/86	—	10/27/86	11
TYNDL6*4	hydrocarbons	10/16/86	—	10/30/86	14
TYNDL6*4	EDB	10/16/86	—	10/27/86	11
TYNDL6*4	Pb	10/16/86	—	11/25/86	57
TYNDL6*5,6	601/602	10/17/86	—	10/30/86	13
TYNDL6*8	601/602	10/17/86	—	11/01/86 (neat)	15*
				11/02/86 (repeat)	16*

Table 3-2. Holding Times for Tyndall Analytical Data (Continued, Page 3 of 3)

Sample Number(s)	Parameters(s)	Collection Date	Extraction Date	Analysis Date	No. of Days
TYNDL6*5,6,8	hydrocarbons	10/17/86	—	10/30/86	13
TYNDL6*5,6,8	EDB	10/17/86	—	10/27/86	10
TYNDL6*5,6,8	Pb	10/17/86	—	11/25/86	56
TYNDL6*11,12	601/602	10/21/86	—	10/29/86	8
TYNDL6*11,12	hydrocarbons	10/21/86	—	11/06/86	16
TYNDL6*11,12	EDB	10/21/86	—	10/27/86	6
TYNDL6*11,12	Pb	10/21/86	—	11/25/86	35
TYNDL6*7	601/602	10/23/86	—	11/01/86	9
TYNDL6*7	hydrocarbons	10/23/86	—	11/06/86	7
TYNDL6*7	Pb	10/23/86	—	12/12/86	50
TYNDL7*1-3	hydrocarbons	10/14/86	—	11/12/86	29†
TYNDL7*1-3	Pb	10/14/86	—	11/25/86	42
TYNDL7*1-3	SW 8240	10/14/86	—	10/22/86	8
		EP TOX Extraction			
TYNDLS*1,2	608	10/14/86	10/16/86	10/20/86	2/4
TYNDLS*1,2	herbicides	10/14/86	10/23/86	11/02/86	9/10†
TYNDLS*1,2	ICAP	10/14/86	—	11/24/86	41
TYNDLS*1,2	Hg	10/14/86	—	10/30/86	16
TYNDLS*1,2	Se	10/14/86	—	12/09/86	56
TYNDLS*3	608	10/21/86	10/28/86	11/28/86	7/31
TYNDLS*3	herbicides	10/21/86	10/23/86	11/11/86	2/19
TYNDLS*3	ICAP	10/21/86	—	11/24/86	34
TYNDLS*3	Hg	10/21/86	—	10/30/86	9
TYNDLS*3	Se	10/21/86	—	12/09/86	49
TYNDLS*3	As	10/21/86	—	11/17/86	27
TYNDLS*1,2	As	10/14/86	—	11/17/86	34

*Exceeds EPA holding time.
†Exceeds ESE imposed holding time goal.

Source: ESE, 1987.

Table 3-3. Holding Times for First and Second Column Gas Chromatograph Data for Tyndall AFB

Sample Number	Collection Date	First Column Analysis Date	No. of Days	Second Column Analysis Date	No. of Days
TYNDL 2*4	10/14/86	10/21/86	7	10/28/86	14
TYNDL 2*7	10/22/86	10/24/86	7	10/30/86	8
TYNDL 2*8	10/22/86	10/24/86	7	10/31/86	9
TYNDL 2*9	10/14/86	10/21/86	7	10/28/86	14
TYNDL 3*3	10/13/86	10/22/86	9	10/27/86	14
TYNDL 3*4	10/13/86	10/22/86	9	10/27/86	14
TYNDL 4*2	10/16/86	10/27/86	11	10/29/86	13
TYNDL 4*3	10/16/86	10/27/86	11	10/29/86	13
TYNDL 4*4	10/21/86	10/29/86	8	10/31/86	10
TYNDL 4*5	10/21/86	10/29/86	8	10/31/86	10
TYNDL 4*8	10/20/86	10/28/86	8	10/31/86	11
TYNDL 4*10	10/20/86	10/28/86	8	10/30/86	10
TYNDL 4*11	10/20/86	10/28/86	8	10/30/86	10
TYNDL 4*13	10/20/86	10/28/86	8	10/30/86	10
TYNDL 4*14	10/14/86	10/23/86	9	10/28/86	14
TYNDL 4*15	10/14/86	10/23/86	9	10/31/86	17*
TYNDL 5*4	10/10/86	10/21/86	11	10/27/86	17*
TYNDL 5*5	10/16/86	10/27/86	11	10/29/86	13
TYNDL 5*7	10/23/86	11/01/86	9	10/31/86	8
TYNDL 5*9	10/09/86	10/21/86	12	10/27/86	18*
TYNDL 6*2	10/15/86	10/27/86	12	10/29/86	14
TYNDL 6*5	10/17/86	10/30/86	13	10/29/86	12
TYNDL 6*6	10/17/86	10/30/86	13	10/29/86	12
TYNDL 6*7	10/23/86	11/01/86	9	10/31/86	8
TYNDL 6*8	10/17/86	11/02/86	16*	10/29/86	12
TYNDL 6*9	10/13/86	10/27/86	14	10/27/86	14
TYNDL 6*10	10/13/86	10/27/86	14	10/27/86	14
TYNDL 6*11	10/21/86	10/29/86	8	10/31/86	10
TYNDL 6*12	10/21/86	10/29/86	8	10/31/86	10

*Exceeds holding time.

Source: ESE, 1987.

Standard matrix (deionized water/standard soil) spikes are used to assess the precision and accuracy of the analytical measurement system (Item 4). ESE's standard acceptance criteria (Table 3-4) were used for each parameter analyzed. All standard matrix spikes were within the criteria. Internal laboratory QC results are included in Appendix Q of this report.

Sample matrix spikes are run to determine if there is a matrix interference. All sample matrix spikes met the acceptance criteria with the following exceptions:

Sample No.	Parameter	Recovery
TYNDL4*1	Lead	133
TYNDL4*4	Lead	131
TYNDL2*9	Petroleum Hydrocarbons	22

The control spikes associated with these samples were acceptable indicating that the analytical system was in control and the recoveries outside the criteria are due to a matrix interference.

Table 3-4. Precision and Accuracy Criteria

Parameter	Method Criteria: Precision (Max RPD)	Method Criteria: Accuracy (% Recovery)
Soil		
Petroleum Hydrocarbons	20	70 - 125
Lead	20	80 - 120
Volatiles (GCMS)		
Toluene-D(8)	--	50 - 160
Bromofluorobenzene	--	50 - 160
1,2-Dichloroethane	--	50 - 160
Water Volatiles (GC)		
Carbon Tetrachloride	31	55 - 131
1,1-Dichloroethane	30	57 - 121
1,2-Dichloroethane	27	63 - 135
1,1,1-Trichloroethane	32	53 - 125
Ethylbenzene	35	48 - 144
Toluene	29	59 - 135
Xylene	30	56 - 134
Petroleum Hydrocarbons	20	70 - 125
Phenolic Compounds		
4-Chl'-3-Meth'Phenol	41	39 - 130
2,4-Dinitrophenol	53	28 - 128
Pentachlorophenol	34	48 - 122
Phenol	47	33 - 130

Table 3-4. Precision and Accuracy Criteria (Continued, Page 2 of 2).

Parameter	Method Criteria: Precision (Max RPD)	Method Criteria: Accuracy (% Recovery)
2-Chlorophenol	34	49 - 130
Pentachlorophenol	34	48 - 122
Metals	20	80 - 120
Base Neutral/Acids (GCMS)		
Nitrobenzene-D(5)	39	41 - 119
2-Fluorobiphenyl	37	44 - 118
Naphthalene-D(8)	50	30 - 120
Phenol-D(5)	80	15 - 103
2-Fluorophenol	67	20 - 140

Notes:

$$\text{Relative Percent Difference (RPD)} = \frac{|R_1 - R_2|}{\frac{(R_1 + R_2)}{2}} \times 100$$

R_1 and R_2 = Concentration at Replicate Control Spike 1 and 2, respectively.

$$\text{90 Recovery} = \frac{100 \times [(\text{spike sample conc.})(\text{sample + spike vol.}) - (\text{sample vol.})(\text{sample conc.})]}{(\text{spike conc.})(\text{spike volume})}$$

Source: ESE, 1987.

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APPENDIX E

PROJECT SAFETY PLAN

INSTALLATION RESTORATION PROGRAM

PHASE II, STAGE 2

PROJECT SAFETY PLAN

TYNDALL AIR FORCE BASE, FLORIDA

Prepared for:

OCCUPATIONAL AND ENVIRONMENTAL HEALTH LABORATORY
Brooks Air Force Base, Texas

Prepared by:

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
Gainesville, Florida

ESE No. 86-378

September 1986

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1.0 POLICY AND RESPONSIBILITY

The purpose of this safety plan is to protect individuals and the environment during Installation Restoration Program (IRP) Phase II, Stage 2 site investigative activities at Tyndall Air Force Base (AFB). This plan includes preventive and protective measures against health hazards, fire and explosion hazards, and mechanical hazards which may exist or occur during field and laboratory activities.

It is the policy of the corporate management of Environmental Science and Engineering, Inc. (ESE) that an effective health and safety program be implemented for this project at Tyndall AFB to protect individuals and the environment. Each and every individual at the site must regard and conduct himself as a member of the "safety team" and adhere to the prescribed site safety plan to ensure his own safety as well as that of his fellow workers and the public.

A key element of this plan is the reliance upon the "buddy system" for all site activities at all times. This system requires that all activities at the site be conducted using a minimum of 2-person teams.

Overall responsibility for safety during the site investigative activities rests with the Project Manager. His responsibilities include:

1. Preparing an effective site and laboratory safety plan for the project,
2. Categorizing the project staff as to the levels of potential exposure to dangerous levels of hazardous materials,
3. Assuring that adequate and appropriate safety training and equipment are available for project personnel,
4. Arranging for medical examinations for specified project personnel, and
5. Designating a Site Safety Supervisor.

The responsibilities of the Site Safety Supervisor include:

1. Implementing all safety procedures and operations onsite;
2. Updating equipment or procedures based upon new information gathered during the site inspection;
3. Upgrading or downgrading the levels of personnel protection based upon site observations (downgrading requires the approval of the Project Manager);
4. Determining and posting locations and routes to medical facilities, including poison control centers and arranging emergency transportation to medical facilities (as required);
5. Notifying (as required) local public emergency officers (i.e., police and fire department) of the nature of the team's operations, and making emergency telephone numbers available to all team members;
6. Assuring that at least one member of the field team is available to stay behind and notify emergency services if the Site Safety Supervisor must enter an area of maximum hazard or only entering this area after he has notified emergency services (police department);
7. Observing work party members for symptoms of exposure or stress; and
8. Arranging for the availability of emergency medical care and first aid, as necessary onsite.

The Site Safety Supervisor has the ultimate responsibility to stop any operation that threatens the health or safety of the team or surrounding populace or causes significant adverse impact to the environment.

The responsibilities of the Field Team Leader include:

1. Assuring and enforcing compliance with the Project Safety Plan,

2. Controlling site entry of unauthorized personnel or coordinating with United States Air Force (USAF) authorities to limit site access,
3. Coordinating site activities such that they may be performed in an efficient and safe manner consistent with the Project Safety Plan,
4. Enforcing the "buddy system" onsite, and
5. Assuring the ready access and availability of all safety equipment.

The responsibilities of all personnel onsite include:

1. Complying with all aspects of the Project Safety Plan, including strict adherence to the "buddy system;"
2. Obeying the orders of the Field Team Leader and the Site Safety Supervisor; and
3. Notifying the Field Team Leader or Site Safety Supervisor of hazardous or potentially hazardous incidents or working situations.

2.0 SITE CHARACTERIZATION AND SPECIFIC SAFETY PLAN

Descriptive detail on Tyndall AFB is given in Table 2-1. The various procedures and precautions that will be followed in assuring preservation of health and safety during all site activities are presented in the plan. The recommended safety precautions and procedures presented are based on a thorough evaluation of the literature and an assessment of the potential hazards at the site, including:

1. The types of materials present at the site,
2. The physical description of the site,
3. The routes of potential exposure,
4. The anticipated levels of hazardous materials present,
5. The acceptable levels of exposure as prescribed by the Occupational Safety and Health Administration (OSHA) and EPA,
6. The duration of potential exposure, and
7. The mitigation of potential exposure by existing routine laboratory and field safety practices.

Guidance for the determination of the hazard potential of chemical compounds was obtained from the following sources:

Identification and Listing of Hazardous Waste, 40 CFR, Part 261.

Dangerous Properties of Industrial Materials, 5th Ed., N. Irving Sax, 1979.

Threshold Limit Values to Chemical Substances and Physical Agents in the Workroom Environment, ACGIH, 1984.

Table 2-1. Site Safety Plan

General Information

Site: Tyndall AFB

Location: Panama City, Florida

Field Work Tasks: Geographical Survey
Installation of Monitoring Wells
Surveying Well Locations
Surface Water and Sediment Sampling
Ground Water Sampling
Soil Sampling

Work Date (Planned): October 1986

Site Characteristics: Tyndall AFB can be described as a low hazard area. Although expected air concentrations are low, personnel should be careful about skin contact with waters and sediments.

Status: Active Air Force Base

Known Chemical Hazards Onsite: Organics, Heavy Metals, Phenolics

Characteristics of Waste Onsite:
States: Liquid and Solid
Hazards: Corrosive, Ignitable, Volatile, Toxic, Unknown

Hazard Evaluation: Level D protection is required unless air monitoring reveals any appreciable air levels of organics during the preliminary survey. Due to the presence of petroleum products, care should be exercised in walking near site areas to prevent injury or contamination. Air monitoring for airborne organics will be conducted on a daily basis during well drilling and sampling activities.

Personal Protective Equipment: Many different job functions are involved in this investigation. Each job presents a special set of circumstances with varying personal protection equipment (PPE) needs. The following narrative describes the specific PPE for each operation.

1. Well Drilling
   a. Hard hats will be worn at all times in the vicinity of the drilling rig.
   b. Goggles or safety glasses will be worn at all times.
   c. Safety shoes will be worn in the vicinity of the rig.

Table 2-1. Site Safety Plan (Continued, Page 2 of 4)

d. Gloves will be worn to protect hands from cables, etc. These gloves should fit tightly to avoid getting caught in machinery.
e. No loose-fitting clothing or free long hair is permitted near the rig.
f. Hands will be kept out of the way of moving parts of the machinery when drilling is in progress.
g. Daily inspection of all ropes, cables, bolts, and moving parts of the rig is mandatory.
h. A first aid kit and fire extinguisher will be available at all times.
i. Rubber gloves will be worn during well development to avoid direct contact with contaminated water.
j. Organic vapor respirators (half-mask, air-purifying type) are to be issued to all personnel participating in drilling operations. These respirators are to be immediately accessible to each person at all well sites.
k. Fresh cartridges shall be placed in organic vapor masks as needed. The guidelines regarding frequency of change of canisters shall be strictly observed. Cartridges should be changed when odors become noticeable or breathing resistance becomes significant.
l. The water supply available for drilling use shall be maintained in a ready state to wash down any personnel receiving significant accidental exposure to gases or vapors emanating from the ground.
m. One self-contained breathing apparatus (SCBA) unit shall be immediately available for emergency use during well drilling operations in areas of greatest potential contamination.
n. All crews will consist of at least two persons.
o. There will be no smoking except in the command post area or inside vehicles. In no case will smoking materials or matches be disposed of onsite except in proper ashtrays.
p. No drilling will occur during impending electrical storms.
q. Cotton coveralls or disposable Tyvek® suits or equivalent should be worn at all times during drilling operations.

2. Surface Water and Ground Water Sampling
   a. Surface water and ground water sampling involve the handling of water containing unknown amounts of chemical contaminants. Safety glasses and safety shoes are to be worn at all times.
   b. Organic vapor air-purifying respirators of the half-mask type must be available if needed. Disposable Tyvek®, chemically resistant outer clothes will be worn to minimize body contact with contaminated water.

Table 2-1. Site Safety Plan (Continued, Page 3 of 4)

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c. If strong odors of organics are detected, the respirator should be worn as a precautionary measure.
d. Impermeable gloves will be worn to prevent skin contact whenever handling the waste samples.
e. Collectable samples must be closed to the atmosphere as soon as practical to lessen inhalation hazards.
f. This sampling job requires Level D protection, and more detail is provided in a later section.

3. Soil/Sludge/Sediment Sampling
   a. Soils, sludges, and sediments may be sources of concentrated toxic heavy metals. Care must be taken to prevent skin contact.
   b. Additional precautions are similar to the section on surface water sampling.
   c. All soil, sludge, and sediment sampling requires Level D protection.

WORK SCHEDULE LIMITATIONS

1. All work will be completed in daylight hours only.

Surveillance Equipment and Materials: Explosimeter, photoionization detector, various vapor and gas detector tubes and hand pumps, personal sampling pumps with organic vapor adsorption tubes, Century OVA

Decontamination Procedures:

1. Wash and rinse with approved water source at station located strategically between sites and command post.

Emergency Precautions:

Acute Exposure Symptoms	First Aid
Chemical splash to skin	10- to 15-minute water flush, evaluate
Chemical splash to eyes	15-minute water flush, evaluate
Unconsciousness--vapor inhalation	Remove affected individual to clean area, administer cardiopulmonary resuscitation (CPR), artificial respiration, or oxygen, as necessary, and evaluate.

Table 2-1. Site Safety Plan (Continued, Page 4 of 4)

EQUIPMENT CHECKOUT

SCBA	X	Cylinders	
Air-Purifying Respirator	X	Cartridges	X
Explosimeter Vapor Detector		Eye Wash Kit	
O_2 Indicator		First Aid Kit	X
Air Sample Pump and Tubes		Drinking Water Supply	X
Radiation Survey Meter		Personal Clothing	X
Radiation Contamination Meter		Decontamination Materials	X
Other: Fire Extinguishers, Scram Emergency Escape Unit			X

Approved by: ______________________

Source: ESE, 1985.

3.0 CONTINGENCY PLANS

3.1 FIRE CONTROL

Flammable materials are known to be stored at some sites. No smoking will be allowed in these areas. Fire extinguishers (10 #ABC), buckets, and shovels will be available at drilling sites and at the command post for use on small fires. The Site Safety Supervisor will post the telephone number of the nearest fire station and local law enforcement agencies in case of a major fire emergency.

3.2 SPILL CONTROL

The chances of a chemical spill are minimal at this site. In the event a drum ruptures and its contents spill, the Site Safety Supervisor and Field Team Leader will be notified immediately. The important factors are that no personnel are overexposed to vapors, gases, or mists, and that the liquid does not ignite. Waste spillage must not be allowed to contaminate any local water source. Small dikes will be erected to contain spills, if necessary, until proper disposal can be completed. Subsequent to cleanup activities, the Site Safety Supervisor will survey the area to ensure that no toxic or explosive vapors remain.

3.3. ACCIDENTS AND ACCIDENT REPORTING

All accidents must be reported to the Site Safety Supervisor immediately. Prompt reporting is essential to the prevention of future incidents in addition to the well being of the affected individual or individuals. The Site Safety Supervisor will notify the Project Manager of any serious accidents. The Site Safety Supervisor or other key members of the field team will be trained in first aid and cardiopulmonary resuscitation (CPR). First aid will be administered to affected personnel under the direction of the Site Safety Supervisor. For serious accidents, the nearest ambulance service will be contacted for transport of injured personnel to the local hospital. The Site Safety Supervisor will have established contact and liasion with medical authorities at a nearby medical facility whose personnel will be knowledgeable of the activities of the field team. Telephone numbers and addresses of ambulance and medical services will be posted onsite.

4 .0 AIR MONITORING

An air monitoring program is paramount to the well being of onsite and offsite personnel. A preliminary survey will be made prior to the initiation of any site work. This survey will be conducted with a Century Organic Vapor detector, an explosimeter, and a radiation survey meter. Once this survey has been completed, adjustments to the types of personal protective equipment needed may be necessary.

In addition to this preliminary site survey, air monitoring may be continued on at least a daily basis and more often, if onsite conditions proved unstable during the field activities. Well drilling operations will be monitored several times during the drilling activities to assure that the level of personnel protection is adequate. Based on this survey, the level of protection may be upgraded. The Site Safety Supervisor will be present in the vicinity of all hazardous operations to make on-the-spot mesurements as necessary. Long-term personal air monitoring will be performed only if survey instruments show significant [greater than 30 parts per million (ppm) total organic vapor] air levels for sustained periods. This equipment will be available at the site for use. All air monitoring results will be recorded and will become part of the permanent record.

5.0 PERSONAL PROTECTIVE EQUIPMENT LEVELS

5.1 PERSONAL PROTECTIVE EQUIPMENT--LEVEL A

1. Open-circuit, pressure-demand, self-contained breathing apparatus (SCBA);
2. Totally encapsulated suit;
3. Gloves, inner (surgical type);
4. Gloves, outer, chemical protective;
5. Boots, chemical protective, steel toe and shank; and
6. Booties, chemical protective.

Criteria

1. Sites known to contain hazards which:
   a. Require the highest level of respiratory protection (as stated above),
   b. Will cause illness as a result of personal exposure,
   c. Permit a reasonable determination that personal exposure could occur to any part of the body; or
2. Sites for which the Project Manager and/or Site Safety Supervisor make a reasonable determination that, based on the lack of information to the contrary, the site may be described as stated directly above.

5.2 PERSONAL PROTECTIVE EQUIPMENT--LEVEL B

1. Open-circuit, pressure-demand SCBA;
2. Chemical protective
   a. Overalls and long-sleeved jacket, or
   b. Coveralls;
3. Gloves, inner (surgical type);
4. Gloves, outer, chemical protective;
5. Boots, chemical protective, steel toe and shank; and
6. Booties, chemical protective.

Criteria

1. Sites known to contain hazards which contain the highest level of respiratory protection as stated above and which:
   a. Will cause illness as a result of personal exposure,
   b. Permit a reasonable determination that personal exposure could occur to any part of the body not covered by Level B protective clothing is unlikely; and
2. Sites for which the Project Manager and/or Site Safety Supervisor make a reasonable determination that, based on the lack of information to the contrary, the site may be described as stated directly above.

5.3 PERSONAL PROTECTIVE CLOTHING--LEVEL C

1. Full face-piece air purifying respirator;
2. Emergency escape oxygen pack (carried);
3. Chemical protective
   a. Overalls and long-sleeved jacket, or
   b. Coveralls;
4. Gloves, inner (surgical type);
5. Gloves, outer, chemical protective;
6. Boots, chemical protective, steel toe and shank; and
7. Booties, chemical protective.

Criteria

1. Sites known to contain hazards which:
   a. Do not require a level of respiratory protection greater than the level afforded by air-purifying respirators (nominal protection of 10) as stated above,
   b. Will cause illness as a result of personal exposure, or
   c. Permit a reasonable determination that personal exposure areas of the body not covered by Level C protective clothing is unlikely; and

2. Sites for which the Project Manager and/or Site Safety Supervisor make a reasonable determination that, based on the lack of information to the contrary, the site may be described as stated directly above.

5.4 PERSONAL PROTECTIVE EQUIPMENT--LEVEL D

1. Coveralls, cotton;
2. Boots/shoes, safety;
3. Safety glasses;
4. Hard hat with optional face shield; and
5. Air-purifying respirator (readily available).

<u>Criteria</u>

Sites where the Project Manager and/or Site Safety Supervisor make a reasonable determination that hazards due to exposure to hazardous materials are unlikely.

5.5. ADDITIONAL PERSONAL PROTECTION

In addition to personal protective equipment, field personnel having duties on or near the hazard site should have ready access to:

1. A fully stocked, industrial-size, first aid kit;
2. An eyewash kit;
3. At least 3 gallons (gal) of potable water in a pressurized container to permit decontamination in event of accidental skin or eye contact with chemicals;
4. Field instrumentation (Geiger counter, oxygen meters, explosion meters, pH meters, photoionization meters, etc.); and
5. Litmus paper.

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APPENDIX F

MONITOR WELL BORING LOGS AND CONSTRUCTION DATA

APPENDIX F
MONITOR WELL CONSTRUCTION SUMMARY

Well Designation	Total Length (ft)	Screen Length (ft)	Screened Interval* (ft)	Casing Length† (ft)	Casing Interval* (ft)
LH2-8	21.2	15	-3.5 to -18.5	6.2	+2.2 to -3.5
LH2-9	22.2	15	-3.5 to -18.5	7.2	+3.2 to -3.5
T3-5	21.0	15	-3.0 to -18.0	6.0	+2.5 to -3.0
T3-6	21.0	15	-3.5 to -18.5	6.0	+2.0 to -3.5
T3-7	23.1	15	-4.0 to -19.0	8.1	+3.6 to -4.0
T6-4	21.2	15	-3.5 to -18.5	6.2	+2.2 to -3.5
T6-5	22.7	15	-4.0 to -19.0	7.7	+3.2 to -4.0
T8-3	20.0	15	-2.0 to -17.0	5.0	+2.5 to -2.0
T8-4	22.8	15	-3.5 to -18.5	7.8	+3.8 to -3.5
T9-3	22.3	15	-4.0 to -19.0	7.3	+2.3 to -4.0
T9-4	21.2	15	-3.0 to -18.0	6.2	+2.2 to -3.0
T10-1	23.3	15	-4.5 to -19.5	8.3	+3.3 to -4.5
T10-2	22.6	15	-4.3 to -19.3	7.6	+2.6 to -4.3
T10-3	22.2	15	-4.5 to -19.5	7.2	+2.2 to -4.5
T11-1	22.3	15	-4.5 to -19.5	7.2	+2.3 to -4.5
T11-2	22.2	15	-4.0 to -19.0	7.2	+2.2 to -4.0
T11-3	22.2	15	-3.5 to -18.5	7.2	+2.2 to -3.5
TOTALS	373.5	255.0		118.5	

Note: Monitor well construction summaries for wells installed during the Phase II, Stage 1 investigation are included in Thiess *et al.*, 1984.

*Screened interval and cased interval referenced to ground level.
†Casing length also includes bottom plug as well as casing interval listed.

Source: ESE, 1987.

Boring No. LH2-8		Location Coordinates	N 455,523.7
Hole Size 12" Nominal	Slot 0.010"		E 1,631,897.7
Screen Length 15'	Mat'l Sch 40 PVC	Filter Materials	Coarse Blast Sand
Diameter 4" I.D.		Grout Type	Type I Portland
Casing Length 6.2'	Mat'l Sch 40 PVC	Development	Centrifugal Pump-175
Diameter 4" I.D.		Static Water Level	+2.68' MSL (10/22
Date Start 10/10/86	Finish 10/15/86	Top of Well Elevation	+8.83' MSL
Contractor ESE	Driller PAThomas	Drill Type	Hollow Stem Auger

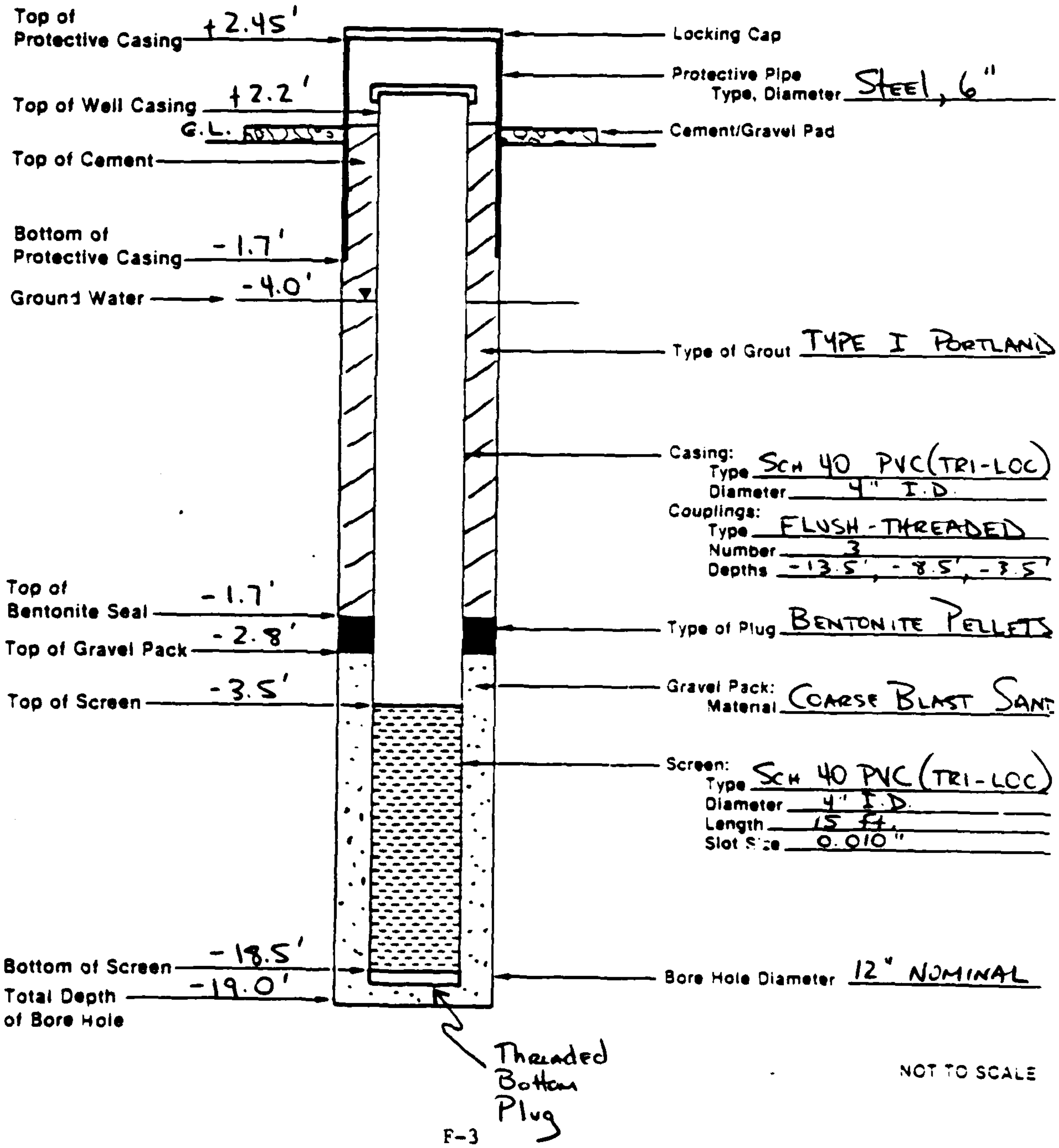
Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetratio Blow Count
0.0-1.5	18"	SP, Sand, fine-to-med. gr., poorly graded, lt. brownish gray 10YR6/2, not plastic, loose, dry, massive bedded	SEE Attached	3-4-5
1.5-3.5	20"	SP, continuation of above to ~2.5 ft., becomes SP, Sand, fine-to-med. gr., poorly graded, pale yellow 5Y8/3, not plastic, loose, moist, ~5 mm. thick organic rich horizons (dark gray 2.5Y3/0) throughout.		7-5-7-8
3.5-8.0	WT 4'	SP, Sand, fine-to-med. gr., poorly graded, buff 10YR7/2, not plastic, loose to mod. dense, saturated below 4 ft.		
8.0-15.0		SM Sand, fine-to-coarse gr., ~15-20% silt, mod. graded, lt. brown 10YR6/1, not-to-sl. plastic, med dense, saturated		
15.0-19.0		SM, Sand, fine-to-coarse gr., mod. graded, dark gray 5Y3/1, ~25% silt, sl. to v. plastic, dense, saturated		
19.0'		END OF BORING		

SOURCE: Environmental Science and Engineering, Inc., 19

MONITOR WELL CONSTRUCTION

Logged By: Jordana
Client: OEHL - Tyndall AFB
Drilling Contractor: ESE
Location: Zone # 2 - Lynn Haven Facility
Driller's Name: Paul Thomas
Job Number: 86378
Well Number: LH2-8
Date/Time: Start 10/10/86 Finish 10/15/86
Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



NOT TO SCALE

Boring No. LH2 - 8 SHEET 1 OF 2

10/10/86

1500 Move on site, set up and level rig
1505 Unload supplies; assemble well casing and screen
1510 Open hole with 6" I.D. Hollow Stem Augers and retrievable plug, advance to 5 ft.
NOTE: Split spoon equipment non-functional; split spooning will be conducted at a later date immediately adjacent well
1520 Continue augering; advance to 15 ft.
1525 Continue augering; advance to 20 ft., terminate boring
Retrievable plug become detached, augers filled with formation materials to -12 ft.; augers pulled from hole, cleaned, plug reattached
1535 Augers reinserted into borehole, lower 10 ft. must be redrilled
1550 Reach 20 ft. depth, terminate boring, well casing inserted inside augers, same problem encountered (lower 3 ft. of borehole filled with sand)
1600 Well pulled from borehole, augers pulled from borehole, new plate attached to cutting end of auger, hole abandoned
1605 Augers disassembled, cleaned, new site selected
1630 Open new hole with 6" I.D. Hollow Stem Auger and retrievable plug; advance to 10 ft.
1640 Augering continues, advance to 20 ft. terminate boring
Well set at -19 ft., augers pulled from borehole
1645 Added gravel pack; sounded at -2.8 ft. after 4 bags (400 lbs.) sand added
Added bentonite pellets; sounded at -1.7 ft. after 1½ buckets (75 lbs) pellet added
1650 Water added to facilitate swelling of bentonite pellets
1655 Equipment disassembled and cleaned
1705 Depart site for day

10/15/86
DATE

[signature]
SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198[illegible]

Boring No. LH2-8 (con't) SHEET 2 OF 2

10/15

0830	Move onto site, set up rig
0835	Drove split spoon from 0.0-1.5 ft. at site immediately adjacent to previously emplaced well LH2-8
0840	Drove split spoon from 1.5-3.5 ft.
0845	Dug holes for protective posts; protective cover and posts grouted into place
0900	Depart from site

10/15/86
DATE

[signature]
SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. LH2-9 | Location Coordinates N 456,019.6
E 1,631,532.8

Hole Size 12" Nominal | Slot 0.010"

Screen Length 15' | Mat'l Sch 40 PVC | Filter Materials Coarse Blast Sand

Diameter 4" I.D. | Grout Type Type I Portland

Casing Length 7.2' | Mat'l Sch 40 PVC | Development Centrifugal Pump - 200 Gl

Diameter 4" I.D. | Static Water Level + 1.60' MSL (10/22/86)

Date Start 10/10/86 | Finish 10/15/86 | Top of Well Elevation + 7.80' MSL

Contractor ESE | Driller PAThomas | Drill Type Hollow Stem Auger

Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5	16"	SM Sand, fine-to-med. gr., ~5% silt, poorly graded, dk. gray 10YR4/1 (top 6" - soil horizon) grading to lt. gray-to-buff 10YR7/2 (lower 10"), not-to-sl. plastic, loose, moist	SEE ATTACHED	3 - 3 - 6
1.5-3.5	18" WT 3'	SP Sand, fine-to-med. gr., poorly graded, white 7.5YR8/0, not plastic, med. dense, moist to saturated, massive bedding		5 - 7 - 18 - 20
3.5-6.0		SP, Sand, continued from above		
6.0-8.5		SM Sand, fine gr., ~10% silt, poorly graded, lt. brown 10YR5/2, sl. plastic, med dense, saturated		
8.5-13.0'		SM Sand, fine gr., ~20-25 % silt, mod. graded, dk. brown 10YR2/2, sl. plastic-to-plastic, dense, saturated, HNU reading < 1 PPM (continued)		

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. LH2-9 (continued) Location Coordinates N 456,019.6

Hole Size 12" Nominal Slot 0.010" E 1,631,532.8

Screen Length 15' Mat'l Sch 40 PVC Filter Materials Coarse Blast Sand

Diameter 4" I.D. Grout Type Type I Portland

Casing Length 7.2' Mat'l Sch 40 PVC Development Centrifugal Pump

Diameter 4" I.D. Static Water Level +1.60' MSL (10/22/86)

Date Start 10/10/86 Finish 10/15/86 Top of Well Elevation +7.80' MSL

Contractor ESE Driller PAThomas Drill Type Hollow Stem Auger

Depth (feet)	Sample	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
13.0-16.0		SM, Sand, fine gr., ~5% silt, poorly-to-mod. graded, buff 10YR6/2, sl. plastic, med dense, saturated		
16.0-18.0		SM, Sand, continuation of above, becomes ~10% silt, med. brown 5YR3/1		
18.0-19.0		SM, Sand, continuation of above, becomes ~20% silt, dark brown 10YR2/2		
19.0'		END OF BORING		

SOURCE: Environmental Science and Engineering, Inc., 198

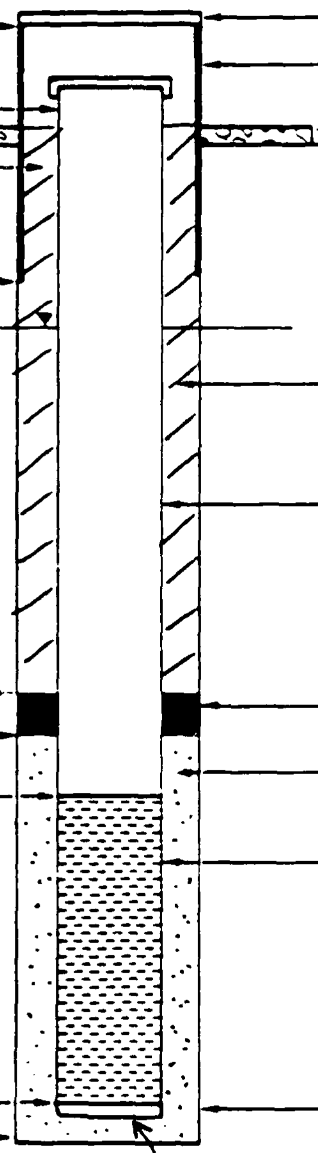
MONITOR WELL CONSTRUCTION

Logged By: Jordana
Drilling Contractor: ESE
Driller's Name: Paul Thomas
Well Number: LH2-9

Client: OEHL - Tyndall AFB
Location: Zone # 2 - Lynn Haven Facility
Job Number: 86378
Date/Time: Start 10/10/86 Finish 10/15/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Top of Protective Casing	+3.6'
Top of Well Casing	+3.2'
(Ground level)	0'
Top of Cement	
Bottom of Protective Casing	-1.3'
Ground Water	-3'
Top of Bentonite Seal	-1.3'
Top of Gravel Pack	-2.4'
Top of Screen	-3.5'
Bottom of Screen	-18.5'
Total Depth of Bore Hole	19.0'

Locking Cap

Protective Pipe Type, Diameter: Steel, 6"

Cement/Gravel Pad

Type of Grout: Type I Portland

Casing:
Type: Sch 40 PVC (Tri-Loc)
Diameter: 4" I.D.

Couplings:
Type: Flush - Threaded
Number: 3
Depths: -13.5', -8.5', -3.5'

Type of Plug: Bentonite Pellets

Gravel Pack:
Material: Coarse Blast Sand

Screen:
Type: Sch 40 PVC (Tri-Loc)
Diameter: 4" I.D.
Length: 15'
Slot Size: 0.010"

Bore Hole Diameter: 12" Nominal

Threaded Bottom Plug

NOT TO SCALE

Boring No. LH2-9 SHEET 1 OF 1

10/10/86

1715	Move on site, set up and level rig
1720	Unload supplies, assemble well casing and screen
1725	Open hole with 6" I.D. Hollow Stem Augers and retrievable plug, advance to 10 ft.
1730	Advance to 15 ft.; HNU reading negative at -13 ft.
1735	Continue augering, advance to 20 ft., terminate boring; well inserted inside augers
1740	Well set at -19 ft., augers pulled from borehole; begin emplacing gravel pack
1745	Continue gravel pack emplacement, sounded at -2.4 ft after 4 bags (400 lbs) sand added. Added bentonite pellets; sounded at -1.3 ft. after 1 1/2 buckets (75 lbs) pellets added
1750	Added water to facilitate swelling of bentonite pellets, disassembled and cleaned equipment, stored all equipment on rig for drill team 3-day layoff
1805	Depart site for day

10/15/86

0905	Move onto site, set up rig
0910	Drove split spoon from 0.0-1.5 ft. at site immediately adjacent to previously emplaced well LH2-9
0915	Drove split spoon from 1.5-3.5 ft.
0920	Dug holes for protective posts; protective cover and posts grouted into place
0940	Depart from site

10/15/86
DATE

SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T3-5 | Location Coordinates N 398,638.6
Hole Size 12" | Slot 0.010" | E 1,655,804.1
Screen Length 15 ft. | Mat'l SCH 40 PVC | Filter Materials Coarse Blast Sand
Diameter 4" I.D. | Grout Type Type I Portland
Casing Length 6.0 ft. | Mat'l SCH 40 PVC | Development Centrifugal Pump - 300 GAL
Diameter 4" I.D. | Static Water Level + 2.2' MSL (10/12/86)
Date Start 10/7/86 | Finish 10/10/86 | Top of Well Elevation + 7.28' MSL
Contractor ESE | Driller Paul Thomas | Drill Type Hollow Stem Auger

Depth (feet)	Sample ▽ Length	* Lithology, Color USCS Munsell	Sketch of Construction	Standard Penetration Blow Count
0'-1.5'		SM/SML - V. FINE GRAINED SAND - 10YR8/2 - WHITE ~10% SILT, POORLY GRADED NOT PLASTIC, LOOSE, DRY		2-3-6
1.5'-3.5'	3' ▽	SM/ML - SAME AS @ 1.5' GRADES ABRUPTLY TO -2.5' TO: SP ~ POORLY GRADED MED. FINE SAND ~ 10% SILT 10YR4/4 - DK. YELSH. BROWN GRADING BELOW WATER TABLE TO EXTREMELY FINE GRAINED FLOWING SAND	SEE Attached	5-3-3-5
20'		END OF BORING		
		* Description of abandoned hole approx 25 feet from installed well		

SOURCE: Environmental Science and Engineering, Inc., 19[illegible]

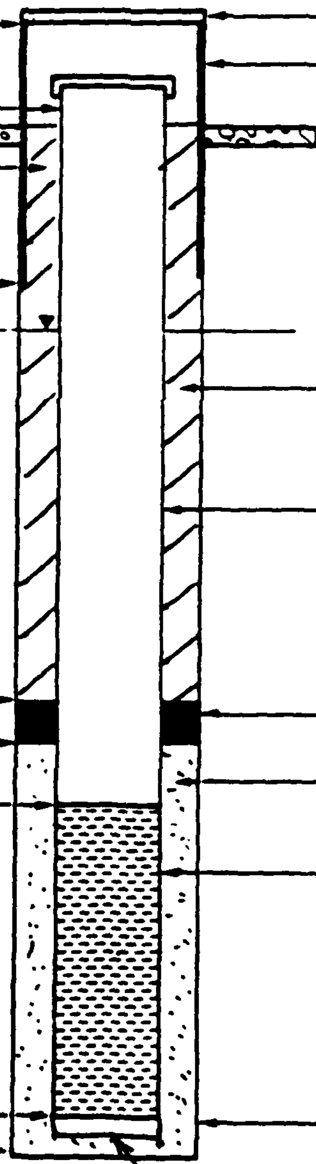
MONITOR WELL CONSTRUCTION

Logged By: ELLIOTT / JORDANA
Drilling Contractor: ESE
Driller's Name: PAUL THOMAS
Well Number: T3-5

Client: OEHL - TYNDALL AFB
Location: ZONE #3 - POL AREA A
Job Number: 86378
Date/Time: Start 10/7/86 Finish 10/10/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Top of Protective Casing: +2.7'
Top of Well Casing: +2.5'
0'
Top of Cement
Bottom of Protective Casing: -1.0'
Ground Water: -4'
Top of Bentonite Seal: -1.0'
Top of Gravel Pack: -2.0'
Top of Screen: -3.0'
Bottom of Screen: -18.0'
Total Depth of Bore Hole: -18.5'

Locking Cap
Protective Pipe Type, Diameter: STEEL, 6"
Cement/Gravel Pad
Type of Grout: TYPE I PORTLAND
Casing:
Type: SCH 40 PVC (TRI-LOC)
Diameter: 4" I.D.
Couplings:
Type: FLUSH - THREADED
Number: 3
Depths: -13.0', -8.0', -3.0'
Type of Plug: BENTONITE PELLETS
Gravel Pack: Material: COARSE BLAST SAND
Screen:
Type: SCH 40 PVC (TRI-LOC)
Diameter: 4" I.D.
Length: 15 ft.
Slot Size: 0.010"
Bore Hole Diameter: 12" NOMINAL

Threaded Bottom Plug

NOT TO SCALE

Boring No. T3-5 SHEET 1 OF 2

10/7/86
0700 LOADING SUPPLIES @ STORAGE AREA, GO TO SITE, CHECK IN (0740)
0800 PICKING UP DRUMS FROM CE
0815 ON SITE - SETTING UP RIG
0825 MOVE RIG - CLEAR NEW SITE
0835 SETTING UP, LEVEL RIG, UNLOAD
0845 DROVE SPLIT SPOON FROM 0' TO 1.5'
0850 DROVE SPLIT SPOON FROM 1.5' TO 3.5'
0855 OPEN HOLE W/6" I.D. HOLLOW STEM AUGER (HSA) + RETRIEVABLE BOTTOM PLUG
0905 ADVANCING TO 10' - WATER TABLE ~ -3'
0910 ADVANCING TO 15'
0915 ADVANCED TO 20 - END OF BORING
0920 ASSEMBLE PVC + SET INSIDE AUGER (15' SCREEN + 5' SOLID)
0925 PULL AUGERS W/ CASING UP TO -18', WAIT FOR BOTTOM TO FILL
0935 ATTEMPT TO SET CASING - POP OUT BOTTOM PLUG + TRY TO PULL
AUGERS - WELL COMING UP TOO - HOLE ALREADY HEAVED + PUSHING PVC UP
0940 TRIP OUT - PULL PVC CASING
0950 BREAKING DOWN AUGERS - WE WILL RE-DRILL + OVERDRILL 5'
1000 RESTART - HOLE HEAVED TO -3' - AUGER THREAD STRIPPED
RE-TAP W/ TAP + DIE
1010 RESTART - ADVANCE HOLE TO ~-5'
1015 ADVANCE TO 15'
1020 BOTTOMED HOLE @ -22' (2' OVER)
1022 SETTING CASING IN HOLE - (15' SCREEN, 5' SOLID + 2.1' STICK UP)
1030 CASING SET @ -17.9' PULLING AUGERS + ADDING SAND
1040 CHECK H2O LEVEL - WELL BLOCKED @ -15' - SAND - POSSIBLE BROKEN
1045 LEAVE SITE TO CALL PROJECT MANAGER - REDRILL? BOTTOM PLUG
1055 PROJ. MGR SAYS PULL + REDRILL W/ AUGER IF POSSIBLE, MUD ROTARY OTHERWISE
1130 RETURNED TO SITE + CLEAN UP, PACK UP, PULL CASING OUT - CAP BROKEN
1145 PULL RIG OFF HOLE, SET UP ON NEW SITE ~20' OVER
1200 OPEN NEW HOLE, ADVANCE IN 5''S TO 20'
1215 INSTALL CASING - AUGERS FILLED W/ SAND TO -16' - CASING WON'T GO DOWN
1220 PULL CASING - INTACT - EXTREMELY FINE SAND FLOWING THROUGH SCREEN SLOTS
+ AUGER - CASING ALREADY FILLING UP INSIDE W/ SAND
1230 - SHUT DOWN - FALL BACK + REGROUP

10/7/86
DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T3-5 (continued) **SHEET** 2 **OF** 2

10/10/86

1115 Move onto site, select new well location, set up and [illegible] rig

1120 Unload supplies and equipment, assemble well casing and screen

1125 Open hole w/ 6" I.D. Hollow Stem Auger and [illegible] plug, advance to 5 ft.

1130 Continue augering, advance to 15 ft. — WT @ ~6'

1135 Advance to 20 ft., terminate boring

NOTE: All completion material (i.e. sand pack [illegible]) moved immediately adjacent to borehole to expedite sand pack emplacement (due to clean nature of formation sands)

1140 Well set inside augers (15 ft. screen, 5 ft. [illegible]), augers w/ casing pulled up to 19 ft. [illegible] knocked loose from augers

- Augers removed from borehole, well [illegible]
- Sand pack immediately emplaced [illegible] mixing w/ formation sands [illegible]
- Sounded @ -2.0 ft. after 400 [illegible]

1150 Added bentonite pellets, sounded @ -1.0 ft. after 1 1/2 buckets

1155 Added water to facilitate swelling of [illegible]

1200 Approx 4 ft of sand measured inside of well casing

1205 Pump set up to do preliminary development in an attempt to remove sand inside well; well pumped [illegible] for 20 minutes — sand removed; [illegible]

1230 HNU measurements taken @ well head, sample [illegible] sand (headspace method), and area where pumped water was discharged (all < [illegible] readings)

1240 [illegible] for protective posts [illegible]

1305 Posts and protective covers grouted into place

1315 Site cleaned

1320 Depart from site

10/10/86 — DATE

[illegible] — SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T3 - 6 | Location Coordinates N 398,456.4
E 1,655,773.5

Hole Size 12" Nominal | Slot 0.010"
Screen Length 15' | Mat'l Sch 40 PVC | Filter Materials Coarse Blast Sand
Diameter 4" I.D. | Grout Type Type I Portland
Casing Length 6.0' | Mat'l Sch 40 PVC | Development Centrifugal Pump - 240 Gl
Diameter 4" I.D. | Static Water Level + 1.3' MSL (10/17/86)
Date Start 10/10/86 | Finish 10/16/86 | Top of Well Elevation + 7.88' MSL
Contractor ESE | Driller PAThomas | Drill Type Hollow Stem Auger

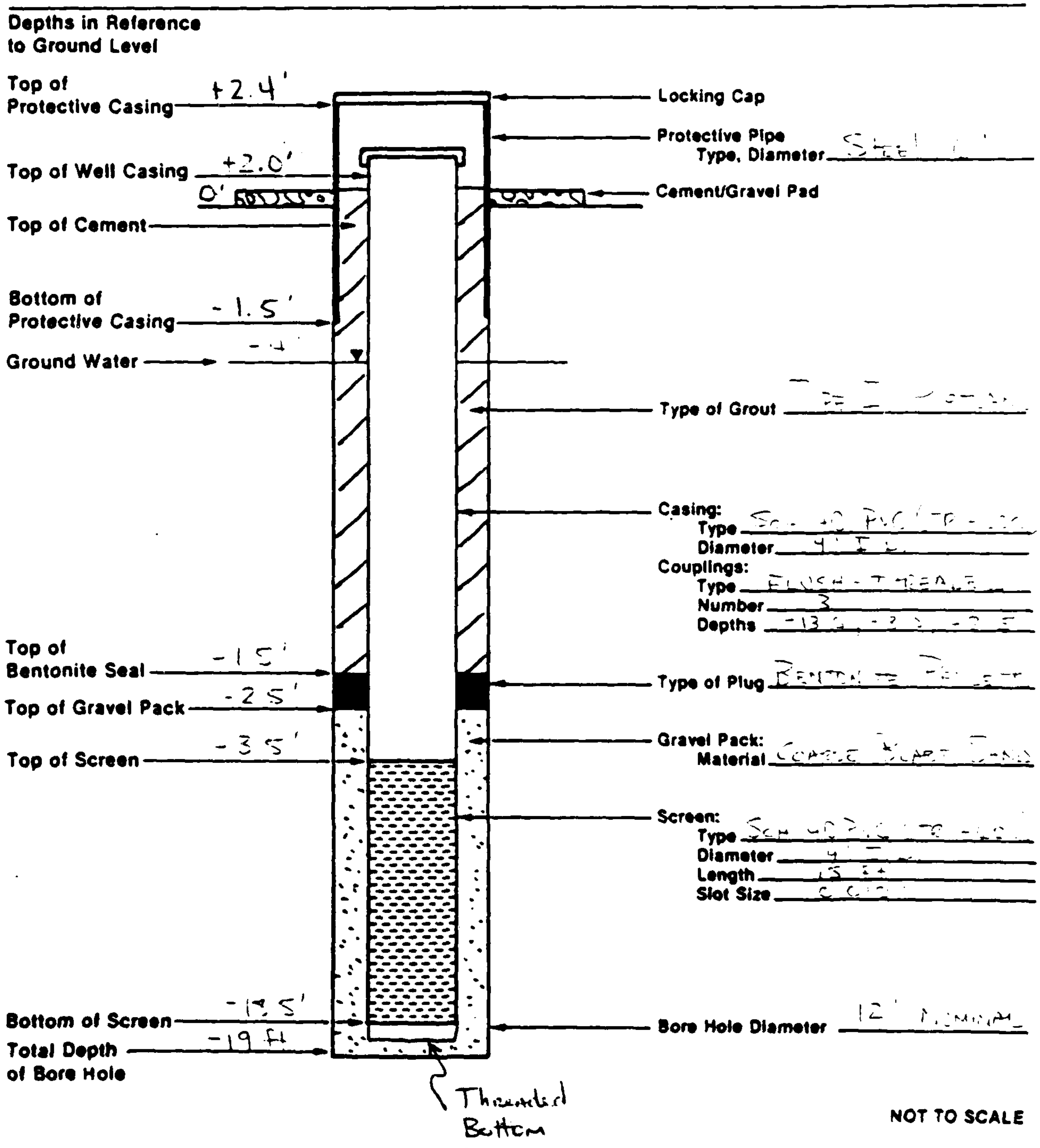
Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5	14"	SM Sand, fine gr., ~10% silt, poorly graded, dk. gray 10YR4/1, not plastic, loose, dry, at 1.0 ft becomes: SP, Sand, fine gr., poorly graded, yellow 10YR7/8, not plastic, loose, dry	See Attached	3 - 4 - 7
1.5-3.5	16"	SP Sand, fine-to-med. gr., poorly graded, pale brown 10YR8/4, not plastic, loose-to-med. dense, moist-to-wet, massive bedding		6 - 7 - 7 - 9
3.5-16.0	WT 4'	SP Sand, fine gr., poorly graded, light gray 10YR7/2, not plastic, med. dense, wet-to-saturated below 4 ft.		
16.0-20.0		SP, Sand, fine gr., poorly graded, dk. grayish brown 2.5Y4/2, not plastic-to-sl. plastic, med. dense, saturated		
20.0		END OF BORING		

SOURCE: Environmental Science and Engineering, Inc., 1980

MONITOR WELL CONSTRUCTION

Logged By: Jordiana
Drilling Contractor: ESE
Driller's Name: Paul Thomas
Well Number: [redacted] - T3-6
Client: CEHL - Tyndall AFB
Location: Zone 3 - POL Area A
Job Number: 86372
Date/Time: Start 10/10/86 Finish 10/16/[illegible]

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



NOT TO SCALE

Boring No. T3-6 **SHEET** 1 **OF** 1

10/10/86

0845 Move onto site, clear area for [illegible] of underground obstructions

0910 Rig moved onto site, setup and [illegible]; supplies and equipment unloaded

0920 Open hole with [illegible] I.D. Hollow Stem Auger and Retrievable Plug, advance to 5 ft, [illegible]

0925 Advance to 15 ft.

0930 Advance to 20 ft., end of boring

0935 All completion materials (gravel pack [illegible]) positioned immediately adjacent to borehole in an attempt to [illegible] emplacement

0940 Pull augers w/ casing up to 19 ft [illegible] [illegible] [illegible] not retrievable [illegible]

- Well set at - 19 ft [illegible] @ + 2.0 ft

- Sand pack added immediately, Augers [illegible] to prevent bridging

NOTE: Due to pure sand/[illegible] nature of formation, [illegible] collapse of borehole occurred mixing formation sands w/ sand pack material

0945 Sand pack sounded @ - 2.5 ft after 2[illegible] [illegible]

0950 Add bentonite pellets sounded @ - 1.5 ft after 1½ [illegible]

0955 Added water to [illegible] [illegible] bentonite [illegible]

1000 Equipment cleaned and loaded to move off site

1010 Depart site

1245 Protective posts [illegible] [illegible] [illegible] and [illegible] grouted into place

1300 Depart site for day

10/16/86

0940 Move on site, set up rig

0945 Drove split spoon (immediately adjacent well) from 0.0 - 1.5 ft, drove split spoon from 1.5 - 3.5 ft.

0955 Depart site

10/16/86 [signature]

DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T3-7 | Location Coordinates N 398,428.4
E 1,655,200.9

Hole Size 12" Nominal | Slot 0.010"

Screen Length 15' | Mat'l Sch 40 PVC | Filter Materials Coarse Blast Sand

Diameter 4" I.D. | Grout Type Type I Portland

Casing Length 8.1' | Mat'l Sch 40 PVC | Development Centrifugal Pump-175 GM

Diameter 4" I.D. | Static Water Level +5.59' MSL (10/19/86)

Date Start 10/15/86 | Finish 10/16/86 | Top of Well Elevation +13.26' MSL

Contractor ESE | Driller PAThomas | Drill Type Hollow Stem Auger

Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5	15"	SP, Sand, fine gr., poorly graded, white 10YR8/1, not plastic, loose, dry, massive bedding		2 - 3 - 5
1.5-3.5	24"	SP, Sand, continuation of above, at -2.3' becomes: SM, Sand, fine gr., ~5-10% silt, poorly graded, dk. brown 10YR3/3 from 2.3-3.0 ft., becomes lt. grayish brown 10YR7/2 from 3.0-3.5 ft., sl. plastic, med. dense, moist-to-wet	SEE Attached	2-3-4-6
3.5-8.0	WT ▼ 4.5'	SM Sand, fine-to-coarse gr., ~10-15% silt, mod. graded, brown 7.5YR4/4, sl. plastic, loose-to-med. dense, moist-to-saturated below 4.5 ft.		
8.0-20.0		SM, Sand, fine-to-med. gr., ~15% silt, poorly graded, lt. brownish gray 10YR6/2, sl. plastic-to-plastic, med. dense, becomes gray 10YR5/1 from 15-20 ft.		
20.0		END OF BORING		

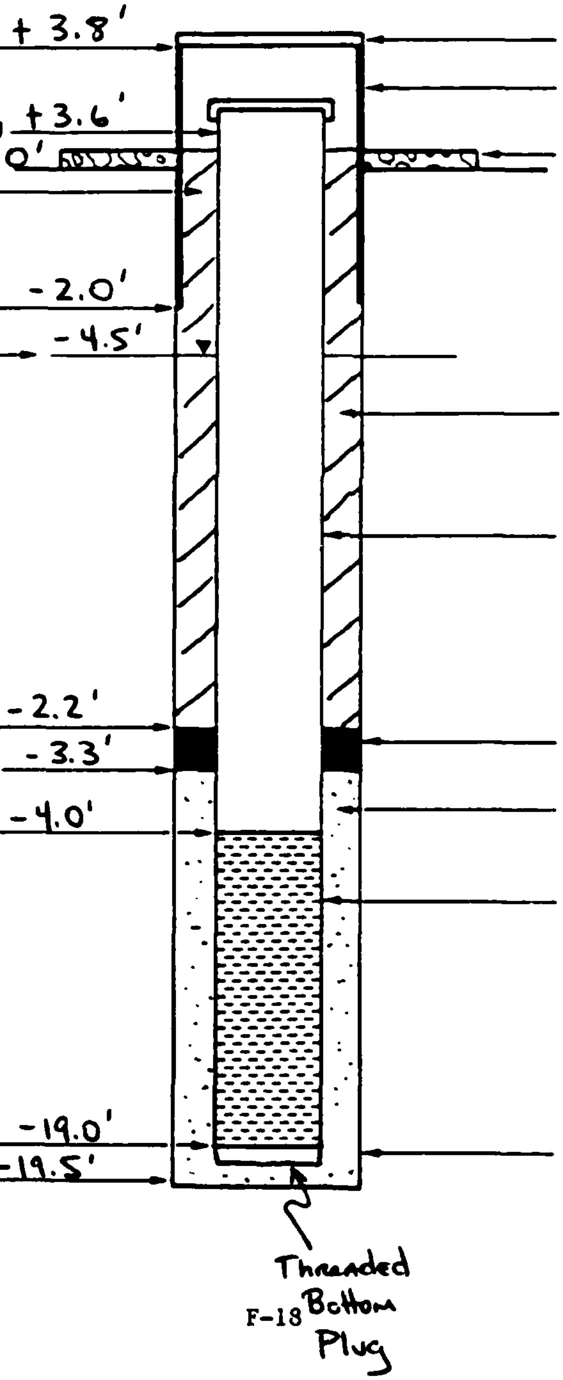
SOURCE: Environmental Science and Engineering, Inc., 1980

MONITOR WELL CONSTRUCTION

Logged By: JORDANA
Client: OEHL - TYNDALL AFB
Drilling Contractor: ESE
Location: ZONE # 3 - POL AREA A
Driller's Name: PAUL THOMAS
Job Number: 86378
Well Number: T3-7
Date/Time: Start 10/15/86 Finish 10/16/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Top of Protective Casing: +3.8'
Top of Well Casing: +3.6'
Top of Cement
Bottom of Protective Casing: -2.0'
Ground Water: -4.5'
Top of Bentonite Seal: -2.2'
Top of Gravel Pack: -3.3'
Top of Screen: -4.0'
Bottom of Screen: -19.0'
Total Depth of Bore Hole: -19.5'

Locking Cap
Protective Pipe Type, Diameter: Steel, 6"
Cement/Gravel Pad
Type of Grout: TYPE I PORTLAND
Casing:
Type: SCH 40 PVC (TRI-LOC)
Diameter: 4" I.D.
Couplings:
Type: FLUSH-THREADED
Number: 3
Depths: -14.0', -9.0', -4.0'
Type of Plug: BENTONITE PELLETS
Gravel Pack: Material: COARSE BLAST SAND
Screen:
Type: SCH 40 PVC (TRI-LOC)
Diameter: 4" I.D.
Length: 15 FT.
Slot Size: 0.010"
Bore Hole Diameter: 12" NOMINAL

NOT TO SCALE

Boring No. T3-7 SHEET 1 OF 1

10/15

1600 Arrive on site, set-up, level rig
1605 Unload equipment and supplies, prepare to drill
1610 Open hole w/ 6" ID Hollow Stem Auger and retrievable plug, advance to 5 ft.
1615 Advanced to 15 ft.
1620 Advanced to 20 ft., terminated boring
Set well inside augers (15' screen, 5 ft. solid)
Popped out retrievable plug, well set @ -19.5 ft
pulled up augers
1625 Added gravel pack, sounded @ 3.3 ft after 400 lbs; added bentonite pellets, sounded @ -2.2 ft after 50 lbs
1630 Added water to facilitate swelling of bentonite pellets, cleaned equipment and loaded it back onto rig and supply truck
1645 Drillers prepare to travel to Quincy, FL to retrieve operational split spoon apparatus; depart site for day

10/16

1010 Arrive on site, set up rig
1015 Drove split spoon (immediately adjacent to well) from 0.0-1.5 ft.
1020 Drove split spoon from 1.5-3.5 ft.
1025 Dug holes for protective posts, grouted protective cover and posts into place
1045 Departed site

10/16/86 DATE

SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T6-4		Location Coordinates	N 386,657.7
			E 1,660,561.1
Hole Size 12"	Slot 0.010"	Filter Materials	Coarse [illegible] Sand
Screen Length 15 ft	Mat'l Sch 40 PVC		
Diameter 4" I.D.		Grout Type	Type I Portland
Casing Length 6.2 Ft.	Mat'l Sch 40 PVC	Development	Centrifugal Pump - 205 GAL
Diameter 4" I.D		Static Water Level	+20.51' MSL (10/19/8[illegible])
Date Start 10/3/86	Finish 10/3/86	Top of Well Elevation	+26.22' MSL
Contractor ESE	Driller Paul Thomas	Drill Type	[illegible] Stem Auger

Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0 - 15'	12"	SM, Sand, fine to medium, ~10% silt, brown @ surface [illegible] 10YR 4/4 [illegible] dark [illegible] brown [illegible] [illegible]		5 - 8 - 10
15-3[illegible]	[illegible]	SM, Sand, fine to medium [illegible] [illegible] dark brown [illegible] [illegible]	See Attached	[illegible]
[illegible]	WTE 4'	SM, Sand, fine to medium [illegible] dark brown [illegible], [redacted] poorly graded, med loose, saturated [illegible]		
19.[illegible]		END OF BORING		

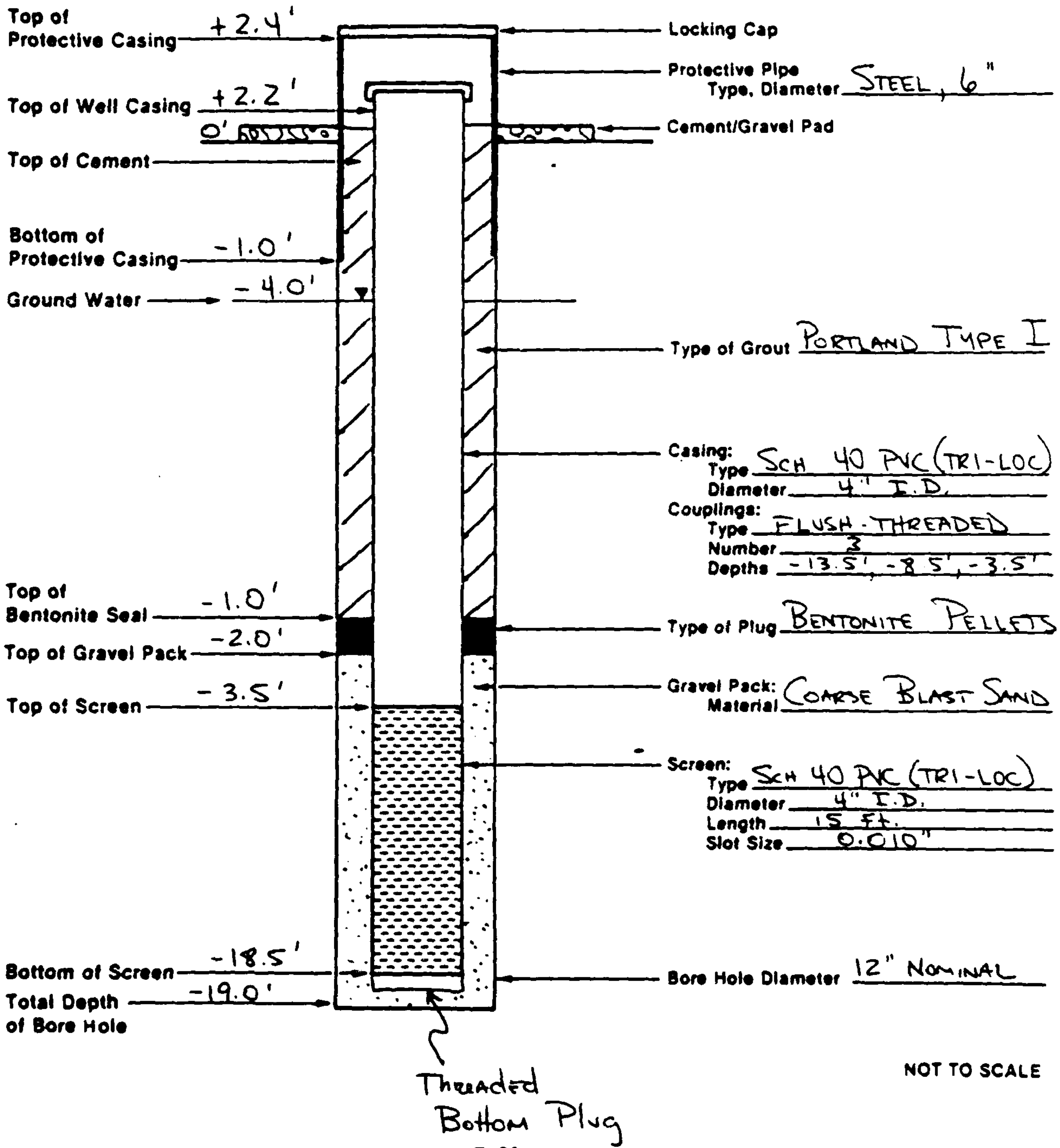
MONITOR WELL CONSTRUCTION

Logged By: Jordana
Drilling Contractor: ESE
Driller's Name: Paul Thomas
Well Number: T6-4

Client: OEHL - Tyndall AFB
Location: Zone #6 - Hwy 98 FTA
Job Number: 86378
Date/Time: Start 10/8/86 Finish 10/9/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



NOT TO SCALE

Boring No. TG-4 SHEET 1 OF 1

10/2/86

1345 - Move onto site, set-up and level rig

1350 - Unload supplies and equipment

1405 - Drove split-spoon from 0.0-1.5 ft

1410 - Drove split spoon from 1.5-3.5 ft [illegible]

Opened hole w/ 6 I.D. [illegible]

and retrievable [illegible]

1415 - Advanced to 10 ft; WT @ ~ 4 ft

1420 - Advanced to 20 ft, terminate boring

1425 - Set well inside of augers (15 ft screen [illegible])

- [illegible] augers w/ casing [illegible]

[illegible]

- [illegible] retrievable [illegible]

- [illegible] @ [illegible]

1435 - [illegible] sand [illegible] sounded @ [illegible]

[illegible] bags (500 lbs)

Add bentonite pellets sounded @ [illegible]

1 bucket (50 lbs)

1440 - Water added to hole [illegible]

bentonite pellets

1445 - Equipment cleaned and packed [illegible]

post holes dug

1500 - Depart from site

10/3/86

0930 - Protective casing and post grouted [illegible]

[illegible] around top of [illegible]

[illegible] geologist not present

11/ 86

- Well inspected by site geologist

10/[illegible] DATE

[illegible] SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

Boring No. T6-5 | Location Coordinates N 386,272.4
Hole Size 12" Nominal | Slot 0.010" | E 1,660,197.6
Screen Length 15' | Mat'l Sch 40 PVC | Filter Materials Coarse Blast Sand
Diameter 4" I.D. | Grout Type Type I Portland
Casing Length 7.7' | Mat'l Sch 40 PVC | Development Centrifugal Pump-300 GAL
Diameter 4" I.D. | Static Water Level +20.73' MSL (10/19/86)
Date Start 10/8/86 | Finish 10/16/86 | Top of Well Elevation +29.37' MSL
Contractor ESE | Driller PAT Lomas | Drill Type Hollow Stem Auger

Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5	18"	SP, FILL, Sand, fine gr.; poorly graded, white-to lt. gray 7.5YR8/0, not plastic, loose, dry, HNU reading < 1 PPM	See Attached	3-3-6
1.5-3.5	18"	SP, FILL, sand, continued as above, sharp contact at -2.5 ft. becomes: SM, Sand, fine gr., ~10% silt, brown at top 10YR4/3 (soil Horizon) becomes buff at base 10YR6/3, not plastic, loose-to-med. dense, dry-to-sl. moist		4-4-4-8
3.5-20.0	WT 6'	SP, Sand, fine-to-med. gr., white 2.5Y8/0 to -12 ft becomes dark brown 10YR3/2 from -12 to -20 ft., poorly graded, not plastic, moist-to-saturated below -6 ft., med. dense		
20.0		END OF BORING.		

SOURCE: Environmental Science and Engineering, Inc., 1980

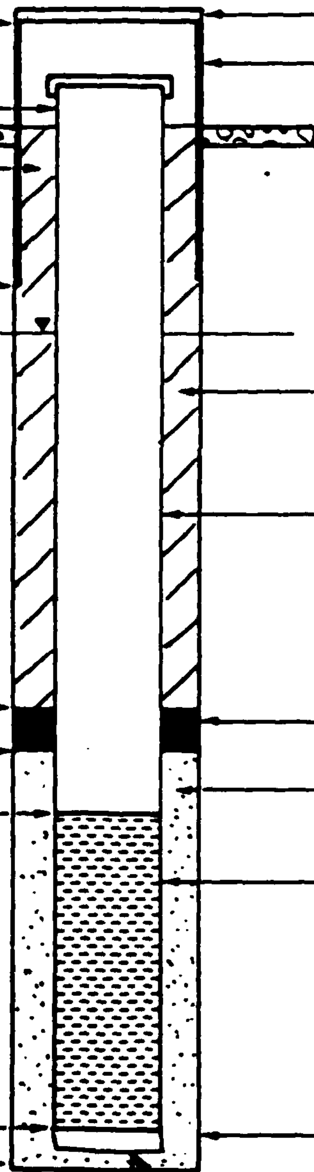
MONITOR WELL CONSTRUCTION

Logged By: Jordana
Drilling Contractor: ESE
Driller's Name: Paul Thomas
Well Number: T6-5

Client: OEHL - Tyndall AFB
Location: Zone #6 - Hwy 98 FTA
Job Number: 86378
Date/Time: Start 10/8/86 Finish 10/16/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Top of Protective Casing: +3.9'
Top of Well Casing: +3.2'
0'
Top of Cement
Bottom of Protective Casing: -2.0'
Ground Water: -6.0'
Top of Bentonite Seal: -2.3'
Top of Gravel Pack: -3.4'
Top of Screen: -4.0'
Bottom of Screen: -19.0'
Total Depth of Bore Hole: -19.5'

Locking Cap
Protective Pipe Type, Diameter: Steel, 6"
Cement/Gravel Pad
Type of Grout: Type I Portland
Casing:
Type: Sch 40 PVC (Tri-Loc)
Diameter: 4" I.D.
Couplings:
Type: Flush - Threaded
Number: 3
Depths: -14.0', -9.0', -4.0'
Type of Plug: Bentonite Pellets
Gravel Pack: Material: Coarse Blast Sand
Screen:
Type: Sch 40 PVC (Tri-Loc)
Diameter: 4" I.D.
Length: 15 ft.
Slot Size: 0.010"
Bore Hole Diameter: 12" Nominal

NOT TO SCALE

Threaded Bottom Plug

Boring No. T6-5 SHEET 1 OF 2

10/5/86

1510 Move on site, set-up and level rig

1515 Unload supplies and equipment, assemble [illegible]

1525 Drove split spoon from 0.0-1.5 ft

1530 Drove split spoon from 1.5-3.5 ft, open hole with

I.D. Hollow Stem Auger and retrievable plug

1535 Advanced auger to 20 ft, WT @ -6 ft end of boring

1540 Set well inside of auger (15 ft screen 5 ft [illegible]

Augers removed from borehole [illegible] @

-20 ft.

1545 Added gravel pack, sounded @ -3.5 ft [illegible]

([illegible] lbs) sand added

1550 Bentonite pellets added, sounding [illegible]

After 2½ buckets ([illegible] lbs) sounded @ -3 [illegible] ft

1600 [illegible] sand pack [illegible]

caused sand pack and bentonite [illegible]

[illegible]

[illegible] decide to pull well [illegible]

[illegible] Depart site for the day

10/[illegible]/86

0900 Arrive on site, set-up rig

0905 Pull well from hole

0915 Grout borehole to surface

0925 Depart site

10/15/86

1215 Move onto site, set up and level rig

1240 Open hole with 6" I.D. Hollow Stem Auger and

retrievable plug; advance to 5 ft.

1245 Continue augering; advance to 10 ft.

1250 Continue augering; advance to 20 ft.; terminate boring

1255 Well set inside augers, lower 3 ft. of augers

filled with sand, preventing well from being set

at proper depth -

DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T6-5 (continued) SHEET 2 OF 2

1300 Pulled well up, pulled augers from borehole, disassembl
and cleaned augers
1325 Re-entered borehole; advanced to 5 ft.
1330 Continued augering, advanced to 10 ft.
1335 Continued augering, advanced to 15 ft.
1340 Continued augering, advanced to 20 ft., terminated
boring; well set inside augers at -19.5 ft.
1345 Augers pulled from hole; gravel pack added
sounded at -3.4 ft. after 3 1/2 bags (350 lbs)
sand added
1350 Added bentonite pellets, sounded at -2.3 ft. after
1 1/2 buckets (75 lbs) of pellets added; water
added to facilitate swelling of bentonite pellets
1355 Equipment disassembled and cleaned, stowed for
transport
1400 EP Toxicity sample taken from cuttings pile due
to odor and coloration of sediments
1410 Depart site for day

10/16/86

1135 Holes dug for protective posts; protective cover and
posts grouted into place
1200 Depart site for day

10/16/86
DATE

SIGNED

F-26

SOURCE: Environmental Science and Engineering, Inc., 198

Boring No. T8-3 | Location Coordinates N 397,666.7
E 1,653,973.8
Hole Size 12" | Slot 0.010"
Screen Length 15' | Mat'l Sch 40 PVC | Filter Materials Coarse Blast Sand
Diameter 4" I.D. | Grout Type Type I Portland
Casing Length 5.0' | Mat'l Sch 40 PVC | Development Centrifugal Pump - 173 Gal
Diameter 4" I.D. | Static Water Level + 6.41' MSL (10/19/86)
Date Start 10/9/86 | Finish 10/9/86 | Top of Well Elevation + 10.34' MSL
Contractor ESE | Driller Paul Thomas | Drill Type Hollow Stem Auger

Depth (feet)	Sample #	Sample Length	Lithology, Color USCS	Lithology, Color Munsell	Sketch of Construction	Standard Penetration Blow Count
0'-1.5'		0.7	SM - SILTY MED. FINE GRAINED SAND ~10% SILT BLACK COLOR RESIDUE IN MATRIX (NO HNU RESPONSE) NOT PLASTIC, DENSE, COMPACT, MOIST	BLACKISH GRAY	ATTACHED	3-4-6
1.5'-3.5'		1.0	SM - SAME AS @ -1.5', SATURATED @ -3.5'			4-5-7-14
			SM - SAME - LEAVES BLACK RESIDUE ON HANDS, NO HNU RESPONSE			
18'			END OF BORING			

SOURCE: Environmental Science and Engineering, Inc., 1980

MONITOR WELL CONSTRUCTION

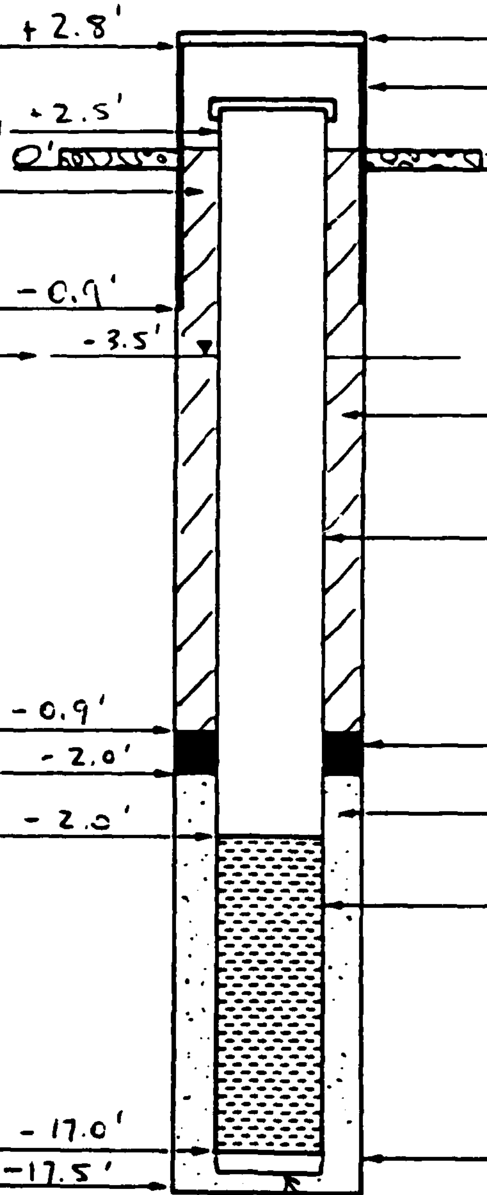
Logged By: Elliott
Drilling Contractor: ESE
Driller's Name: Paul Thomas
Well Number: TR-3

Client: CEHL - Tyndall AFB
Location: Zone # 8 - 6CCC Area Landfill
Job Number: 86378
Date/Time: Start 10/7/86 Finish 10/9/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level

Top of Protective Casing: + 2.8'
Top of Well Casing: + 2.5'
0'
Top of Cement
Bottom of Protective Casing: - 0.9'
Ground Water: - 3.5'
Top of Bentonite Seal: - 0.9'
Top of Gravel Pack: - 2.0'
Top of Screen: - 2.0'
Bottom of Screen: - 17.0'
Total Depth of Bore Hole: - 17.5'



Locking Cap
Protective Pipe Type, Diameter: Steel, 6"
Cement/Gravel Pad
Type of Grout: Type I Portland
Casing:
Type: Sch 40 PVC (TRI-LOC)
Diameter: 4" I.D.
Couplings:
Type: Flush Threaded
Number: 3
Depths: - 12.0', - 7.0', - 2.0'
Type of Plug: Bentonite Pellets
Gravel Pack: Material: Coarse Blast Sand
Screen:
Type: Sch 40 PVC (TRI-LOC)
Diameter: 4" I.D.
Length: 15 ft.
Slot Size: 0.010"
Bore Hole Diameter: 12" Nominal

Threaded Bottom Plug

NOT TO SCALE

Boring No. T8-3 SHEET 1 OF 1

10/7/86

1655 MOVE ONTO SITE, SET UP RIG
1700 LEVELING RIG
1705 UNLOAD SUPPLIES
1710 DROVE SPLIT SPOON 0' TO 1.5'
1715 DROVE SPLIT SPOON FROM 1.5' TO 3.5'
1720 OPEN HOLE W/ HSA + RETRIEVABLE PLUG
1725 ADVANCING TO 5'
1735 ADVANCING TO 15'
1740 ADVANCED TO 18' END OF BORING
1745 ASSEMBLING PVC IN WELL (15' SCREEN, 5' SOLID)
1750 PVC DOWN + SET @ -17.2', PULLING AUGERS — STICK UP = 2.8'
1800 ADDED SAND - SOUNDED @ -2' AFTER 4 BAGS
1805 ADDING BENTONITE PELLETS - SOUNDED @ -2.4' AFTER 2 BUCKETS,
OUT OF PELLETS - NEED TO ADD MORE TO BRING UP TO -1.0'
1815 PACKING UP, CLEANING AUGERS
1830 DEPART SITE FOR DAY

10/8/86

0945 Added 2/3 bucket bentonite pellets, sounded @ 0.9 Ft
0955 Post holes dug
1005 Departed site

10/9/86

Posts and protective casing grouted into place (performed by drillers independent of site geologist - time uncertain)
1610 - Well completion inspected by site geologist

10/9/86 DATE

[signature] SIGNED

F-29

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T8-4		Location Coordinates	N 397,440.0
Hole Size 12" Nominal	Slot 0.010"		E 1,654,020.7
Screen Length 15 ft.	Mat'l Sch. 40 PVC	Filter Materials	Coarse Blast Sand
Diameter 4" I.D.		Grout Type	Type I Portland
Casing Length 7.8 ft.	Mat'l Sch. 40 PVC	Development	Centrifugal Pump-215Gal
Diameter 4" I.D.		Static Water Level	+7.53' MSL (10/19/86)
Date Start 10/9/86	Finish 10/16/86	Top of Well Elevation	+14.24' MSL
Contractor ESE	Driller Paul Thomas	Drill Type	Hollow Stem Auger

Depth (feet)	Sample Length	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0.0-1.5'	18"	SP, SAND, fine-to-med gr., poorly graded, lt. brown top 6" (soil horizon) 10YR6/4, becomes white 10YR8/1 lower 12", not plastic, loose, dry to sl. moist	SEE Attached	2-2-3
1.5-3.5'	24"	SP, Sand, fine gr., white 10YR8/1, poorly graded, not plastic, loose, slightly moist, massive bedding		3-7-7-10
3.5-9.0'	WT ▼ 4.0'	SP, continued as above, becomes saturated below 4'		
9.0-14.0'		SM, Sand, fine gr., ~25% silt, dark brown 5YR3/2, slightly plastic, saturated, HNU reading ~1 PPM (headspace method)		
14-19'		SM, same as above becoming grayish brown 10YR5/2, reduced to ~10% silt at base of section		
19.5'		END OF BORING		

SOURCE: Environmental Science and Engineering, Inc., 19[illegible]

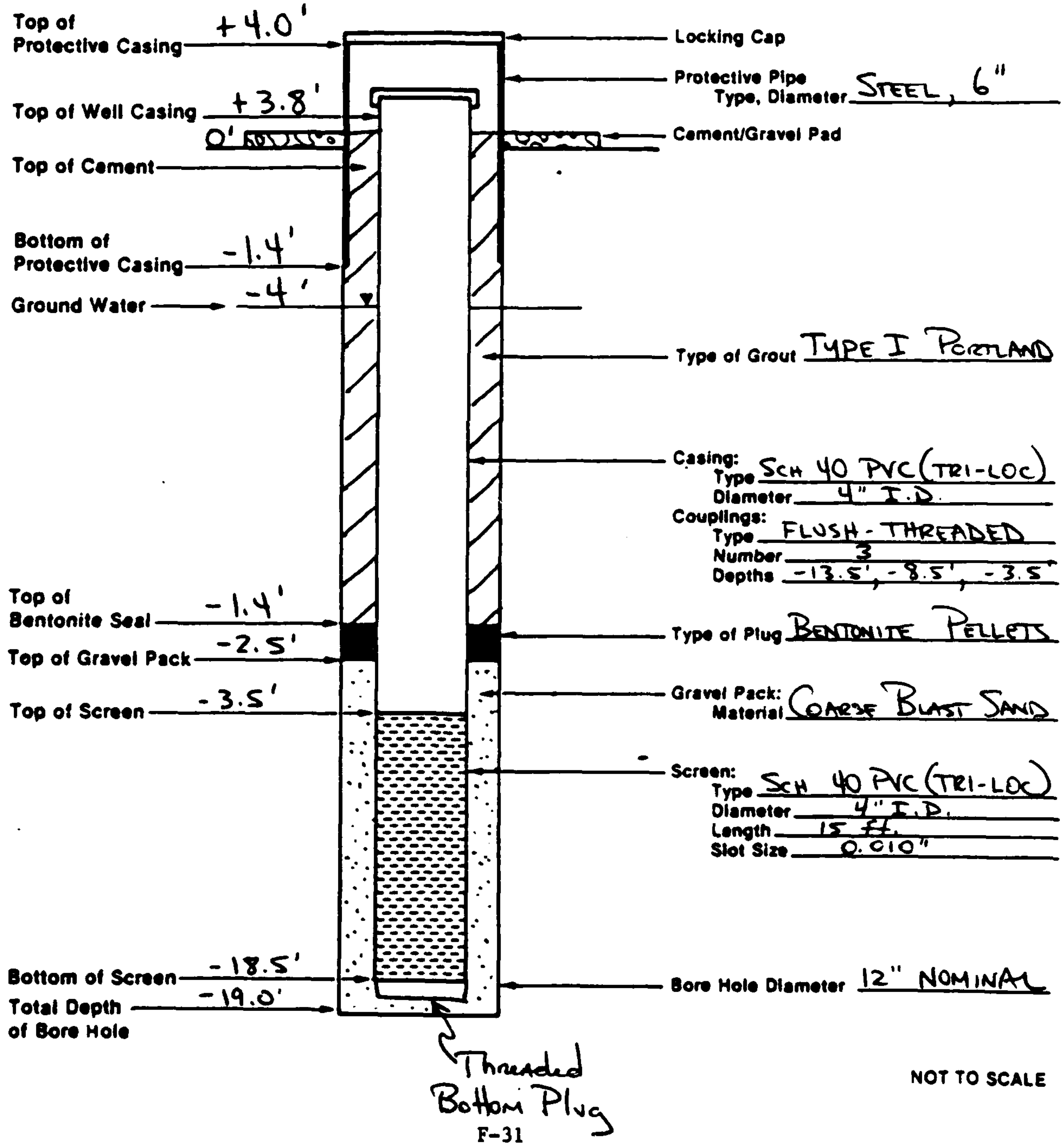
MONITOR WELL CONSTRUCTION

Logged By: Jordana
Drilling Contractor: ESE
Driller's Name: Paul Thomas
Well Number: T8-4

Client: OEHL - TYNDALL AFB
Location: ZONE #8 - 6000 AREA LANDFILL
Job Number: 86378
Date/Time: Start 10/9/86 Finish 10/16/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):
Protective cover and posts stick-up relatively high due to obscurity of location in an attempt to avoid inadvertent damage

Depths in Reference to Ground Level



NOT TO SCALE

Boring No. T8-4 SHEET 1 OF 1

10/9/86

1620 Arrive at Zone 8 area, survey area with Jordana, Schulze, Dietzel, and Hunter present

1715 Select site for location of well, driller prepares to set up on site

1730 Drill rig becomes stuck in soft sand, must be raised on jacks and dug out.

1825 Drill rig set up on site

1830 Depart site for day

10/10/86

0645 Arrive on site, set up and level rig

0650 Unload supplies and equipment, assemble well casing and screen

0715 Drove split spoon from 0.0 - 1.5 ft.

0720 Drove split spoon from 1.5 - 3.5 ft.

0725 Open hole w/ 6" I.D. hollow stem auger and retrievable plug

Advanced to 5 ft; WT @ 4 ft.

0730 Advanced to 15 ft

0735 Advanced to 19.5 ft.; end of boring

0740 Set well inside of auger (15 ft. screen, 5 ft. solid)

- Pop out retrievable plug; pulled up augers

- Well set @ 19.5 ft.

0745 Added gravel pack; sounded @ - 2.5 ft. after 350 lbs. gravel added (3½ BAGS)

0750 Added bentonite pellets, sounded @ - 1.4 ft. after 75 lbs pellets added (1½ buckets)

0755 Water added to hole to facilitate swelling of bentonite pellets

0800 Equipment cleaned, site cleaned

0825 Depart site for day

10/16

1055 Posts and protective casing grouted into place

1120 Depart site

10/16/86
DATE

SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198[illegible]

Boring No. T9-3 | Location Coordinates N 390,851.2
E 1,655,686.1

Hole Size 12" NOMINAL | Slot 0.010"

Screen Length 15' | Mat'l Sch 40 PVC | Filter Materials COARSE BLAST SAND

Diameter 4" I.D. | Grout Type TYPE I PORTLAND

Casing Length 6.8' | Mat'l Sch 40 PVC | Development Centrifugal Pump - 200 GAL

Diameter 4" I.D. | Static Water Level + 20.00' MSL (10/19/86)

Date Start 10/5/86 | Finish 10/6/86 | Top of Well Elevation + 28.42' MSL

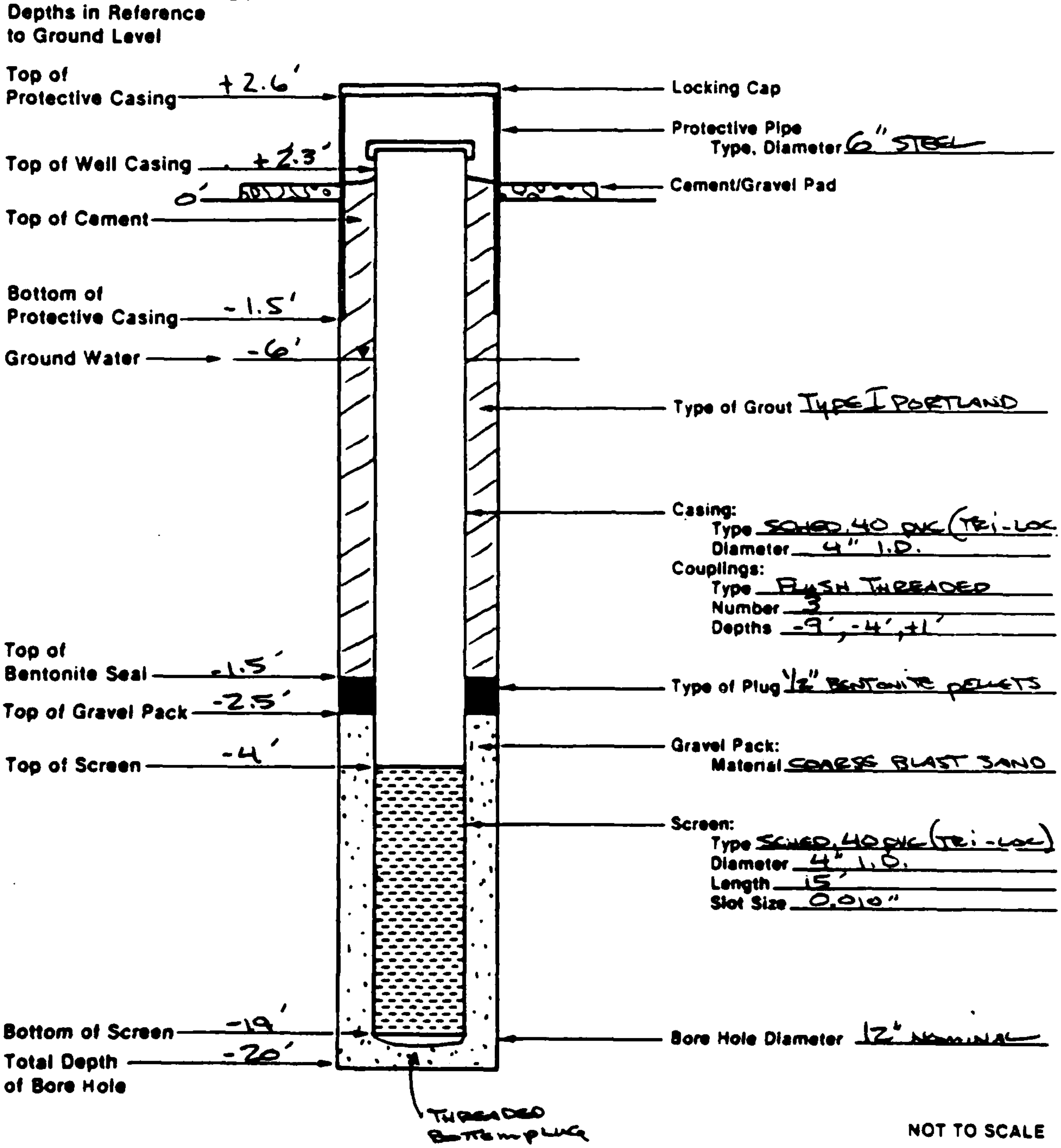
Contractor ESE | Driller PAUL THOMAS | Drill Type Hollow Stem Auger

Depth (feet)	Sample #	Sample Length	Lithology, Color (USCS / MUNSELL)	Sketch of Construction	Standard Penetration Blow Count
0'-1.5'	1	0.5	SP- POORLY GRADED FINE GRAINED SAND w/10% SILT 10YR6/2- LT. BROWNISH GRAY NOT PLASTIC, LOOSE, DRY ORG. MAT'L. PRESENT RANDOMLY DISTR.	SEE ATTACHED SHEET	2-4-6
1.5'-3.5'	2	1.0	SP- SAME AS @ 1.5', EXCEPT BECOMING MOIST TO V. MOIST DOWNWARD WOOD FRAG. IN DRIVE SHOE		4-2-2-4
5'			SP- BECOMING SATURATED		
6'					
10'-20'			SP- FINE GRAINED SAND - BLACK, IN AN OILY BLACK MATRIX, DENSE/COHESIVE, SL. PLASTIC, SATURATED w/ OILY IRRIDESCENT SHEEN, w "OIL" ODOR Hnu: HEADSPACE OF SOIL SAMPLE AFTER 10 min = 8 ppm BACKGROUND ≈ 1 ppm		
-20'			— END OF BORING —		

SOURCE: Environmental Science and Engineering, Inc., 1980

MONITOR WELL CONSTRUCTION

Logged By: W. ELLIOTT
Drilling Contractor: ESE
Driller's Name: PAUL THOMAS
Well Number: T9-3
Client: AEHL/TYNDALL AFB
Location: POL, AREA 500
Job Number: 86-318
Date/Time: Start 10/3/86 Finish 10/6/86
Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



NOT TO SCALE

Boring No. T9-3 SHEET 1 OF 1

10/3/86

1050 SETTING RIG UP ON SITE
1100 DROVE 18" SPLIT SPOON FROM 0' TO 1.5', OPEN HOLE W/HSA + BOTTOM CAP
1105 ADVANCING TO 5'
1110 ADVANCING TO 10' VISUALLY CONTAMINATED HNU (HEAD SPACE ~ 50 ppm
1115 ADVANCING TO 15' OILY MATRIX BACKGROUND ~ <1 ppm)
1120 ADVANCING TO 20' END OF BORING
1125 CASING DOWN + SET @ -19' PULLING AUGERS - 3.5' STICKUP
1130 ADDING SAND - SOUNDED @ -2.5'
1135 ADDING PELLETS - SOUNDED @ -1.5'
1140 SAWING OFF CASING FOR 2.3' STICK UP
1145 WASHING OFF AUGERS W/TSP + WATER
1200 BREAK FOR LUNCH

1645 COLLECTED CUTTINGS SAMPLE FOR EP TOX TEST -
SAMPLE # TYNDLS#1-SS 86 449 0000 STEP 1

10/6/86

1000 SET PROTECTIVE POSTS + COVER, GROUT IN POSTS + WELL,
2'X2' PAD - USING # 2 1/2 BAGS TYPE I PORTLAND

10/6/86 DATE WGF SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T9-4

Location Coordinates N 391,122.9
E 1,655,803.4

Hole Size 12" NOMINAL Slot 0.010"

Screen Length 15' Mat'l SCH 40 PVC

Filter Materials COARSE BLAST SAND

Diameter 4" I.D.

Grout Type TYPE I PORTLAND

Casing Length 5.7' Mat'l SCH 40 PVC

Development CENTRIFUGAL PUMP - 153 GAL

Diameter 4" I.D.

Static Water Level +15.10' MSL (10/19/86)

Date Start 10/5/86 Finish 10/6/86

Top of Well Elevation +23.94' MSL

Contractor ESE Driller PAUL THOMAS Drill Type HOLLOW STEM AUGER

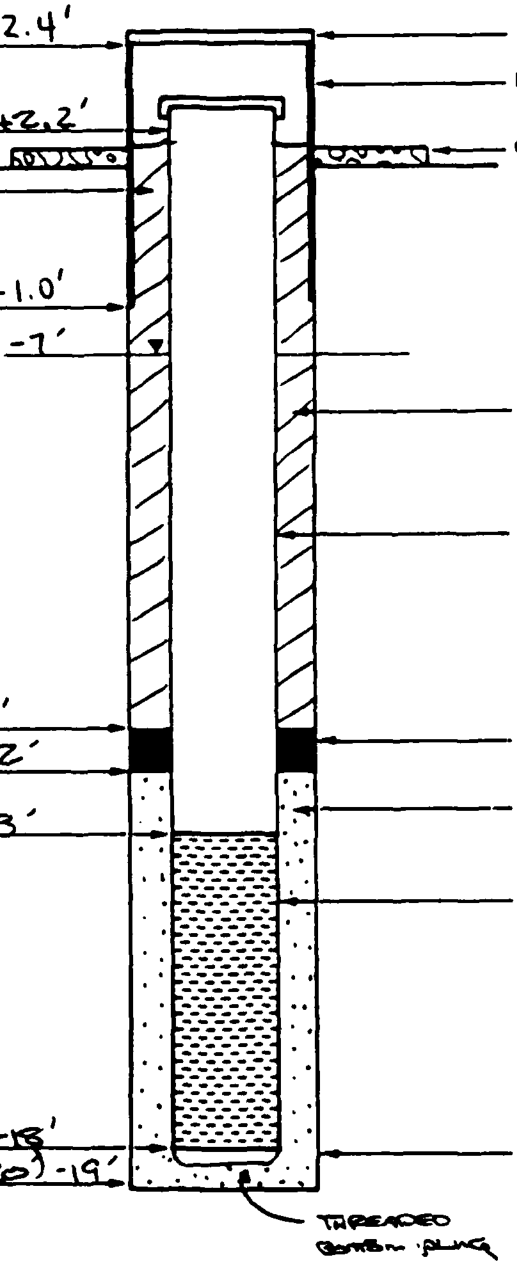
Depth (feet)	Sample	Lithology, Color	Sketch of Construction	Standard Penetration Blow Count
0'-4'		SM/SP - FINE GRAINED SAND w/ ~10% SILT 5Y 5/1 - GRAY, NOT PLASTIC LOOSE, DRY	SEE ATACHED SHEET	
4'-20'	6.5-7'	SM/SP - OILY FINE GRAINED SAND BLACK - OIL MATRIX, SL. PLASTIC, DENSE, SATURATED, STRONG ODOR		
		END OF BORING		

SOURCE: Environmental Science and Engineering, Inc., 19

MONITOR WELL CONSTRUCTION

Logged By: W. ELLIOTT
Drilling Contractor: ESE
Driller's Name: PAUL THOMAS
Well Number: T9-4
Client: OEHL/TYNDALL AFB
Location: POL, AREA 500
Job Number: 86-378
Date/Time: Start 10/5/86 Finish 10/6/86
Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Top of Protective Casing	+2.4'
Top of Well Casing	+2.2'
Ground level	0'
Top of Cement	
Bottom of Protective Casing	-1.0'
Ground Water	-7'
Top of Bentonite Seal	-1'
Top of Gravel Pack	-2'
Top of Screen	-3'
Bottom of Screen	-18'
Total Depth of Bore Hole	(-20') -19'

Locking Cap

Protective Pipe Type, Diameter STEEL, 6"

Cement/Gravel Pad

Type of Grout TYPE I PORTLAND

Casing:
Type SCH 40 PVC (TRI-LOC)
Diameter 4" I.D.

Couplings:
Type FLUSH THREADED
Number 2
Depths -8', -3'

Type of Plug 1/2" BENTONITE PELLETS

Gravel Pack:
Material COARSE BLAST SAND

Screen:
Type SCH 40 PVC (TRI-LOC)
Diameter 4" I.D.
Length 15'
Slot Size 0.010"

Bore Hole Diameter 12" NOMINAL

NOT TO SCALE

Boring No. T9-4 SHEET 1 OF 1

10/5/86

1520 SET UP RIG ON SITE, DIG W/ POSTHOLE DIGGERS TO -5' - OILY SAND ~ -4'

1540 (COLLECTED EP TOXICITY SAMPLE T9H (T4NDL S#2-SS) STRONG ODOR)
(@ -4' w/ SPLIT SPOON @ 15:45 HRS) (86 4490000 SOTEP2)
HNU READING (: SAMPLE: 200 ppm HEADSPACE
BACKGROUND: <1 ppm)

1545 OPEN HOLE W/ HSA + RETRIEVABLE PLUG, ADVANCE TO 5' - OILY CUTTINGS

1550 ADVANCE TO 10' - OILY SAND CUTTINGS

1555 ADVANCE TO 15' OILY SAND CUTTINGS

1600 ADVANCED TO 20', PULL AUGER UP 1' OFF BOTTOM, SET CASING IN AUGER W/ 15' SCREEN, 5' SOLID, ~~[illegible]~~ STICK UP 2.0'

1610 SETTING CASING IN HOLE @ -18'

1620 ADDING SAND - SOUNDED @ -2' AFTER 4 1/2 BAGS

1625 ADDING BENTONITE PELLETS - SOUNDED @ -1' AFTER 1/2 PAIL

1630 ADDING H2O TO PELLETS

1635 PACKING UP, WASHING AUGERS

1645 PULL OFF SITE

10/6/86

1100 INSTALL PROT. POSTS, LOCKING STEEL COVER + GROUT WELL + POSTS IN PLACE

10/5/86 DATE NSE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T10-1		Location Coordinates N 396,724.9	
Hole Size 12" Nominal	Slot 0.010"	E 1,655,781.3	
Screen Length 15'	Mat'l Sch 40 PVC	Filter Materials Coarse Blast Sand	
Diameter 4" I.D.		Grout Type Type I Portland	
Casing Length 8.3'	Mat'l Sch 40 PVC	Development Centrifugal Pump - 147 Gal	
Diameter 4" I.D.		Static Water Level + 3.96' MSL (10/19/86)	
Date Start 10/4/86	Finish 10/6/86	Top of Well Elevation + 14.13' MSL	
Contractor ESE	Driller Paul Thomas	Drill Type Hollow Stem Auger	

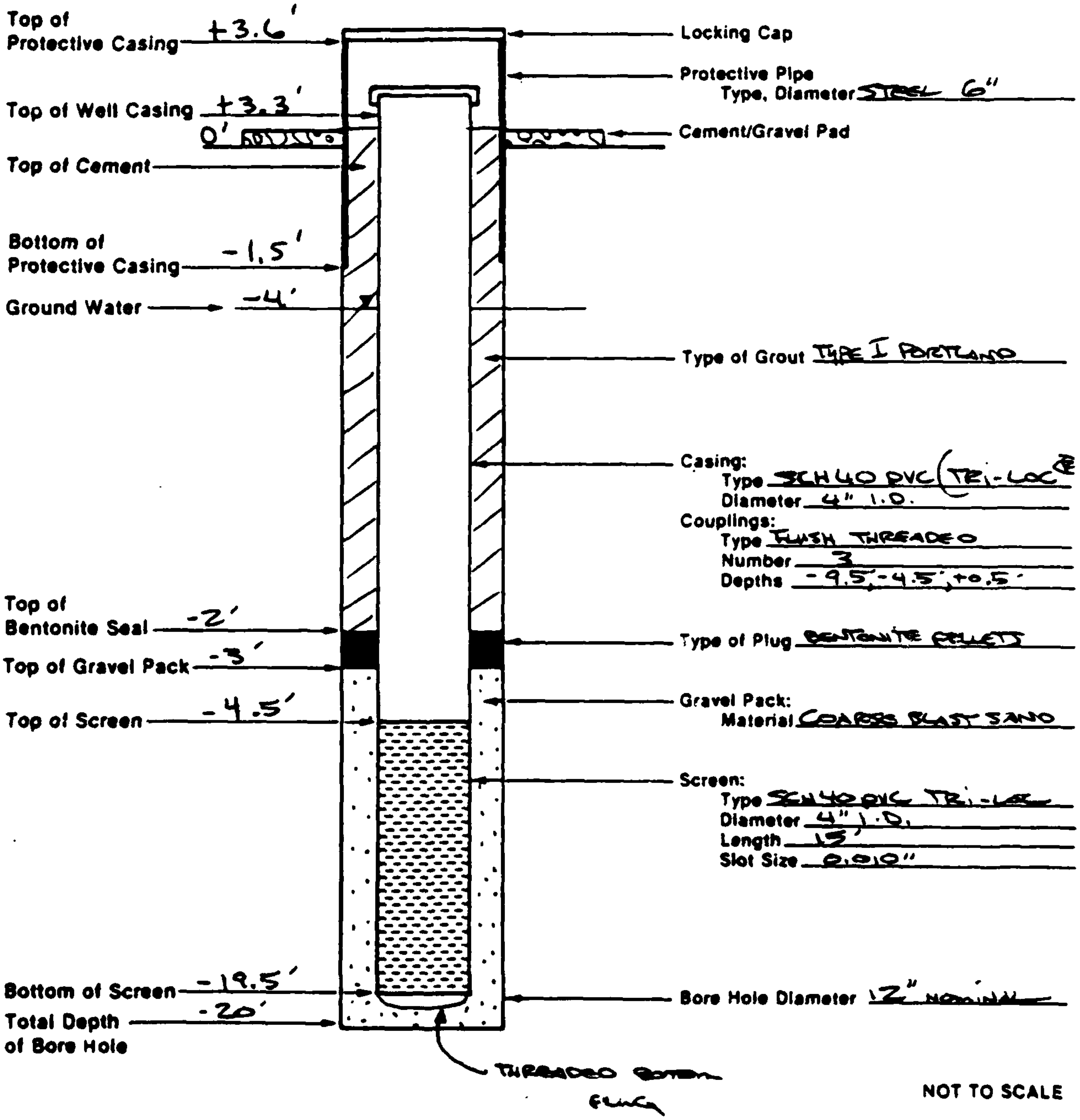
Depth (feet)	Sample #	Sample Length	Lithology, Color USCS Munsell	Sketch of Construction	Standard Penetration Blow Count
0'-1.5'	1	0.6'	Oyster shell fill material - man-made		6-13-13
~~1.5~~				~~See~~ Attached Sheet	
1.5'-3.5' ↓	2	1.5'	SP - Med. grained sand ~10% silt, poorly graded 10YR 7/8 - yellow not plastic, loose to compact - moist		7-10-11-12
5'-9'	3		SP - same as @ 1.5-3.5'		
9'-	4		SM silty fine grained sand 5Y 4/2 - olive gray		
15'-	5		SM/ML 50/50 mix, silt + v. fine gr. sand 5Y 4/2 - olive gray sl. plastic dense, saturated		
20'-	6		ML same as @ 15' — End of boring —		

SOURCE: Environmental Science and Engineering, Inc., 19

MONITOR WELL CONSTRUCTION

Logged By: W. Blust
Drilling Contractor: ESE
Driller's Name: Paul Thomas
Well Number: T10-1
Client: OEHL Tyndall AFB
Location: Shell Bank FTA
Job Number: 86-378
Date/Time: Start 10/4/86 Finish 10/6/86
Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



NOT TO SCALE

Boring No. T10-1 SHEET 1 OF 1

10/4/86

1730 SETTING RIG UP ON SITE, UNLOADING
1740 DROVE 18" SPLIT SPOON FROM 0' TO -1.5'
1745 DROVE 24" SPLIT SPOON FROM 1.5' TO 3.5', ADVANCE TO 5' W/ HSA
1750 ADVANCE TO 10', AUGER STUCK ON KELLY HEAD
1755 ADVANCE TO 15'
1800 ADVANCE TO 20' - END OF BORING
1810 ASSEMBLE PVC, ATTEMPT TO SET CASING - HOLE HEAVED UP TO -9'
1815 TRIP OUT AUGER - BOTTOM CAP BENT, - REMOVE + REPAIR
1840 REDRILL STARTING @ -9' - REENTER + ADVANCE TO -10'
1845 ADVANCING TO 15'
1850
1855 ASSEMBLING PVC IN AUGERS - 15' SCREEN, 5' SOLID, 2.5' RISER
1900 PULL AUGERS - WELL SET @ - W/ 3' S.U.
1905 ADDING SAND - SOUNDED @ -3' AFTER 4 1/2 BAGS
1915 ADDING BENTONITE PELLETS - SOUNDED @ -2' AFTER 1 1/2 PAILS
1920 PACKING UP, ADD H2O TO PELLETS, SECURE RIG — S. 4 1/2 BAG
1930 LEAVE SITE FOR DAY — BP. 1 1/2 PAIL

10/6/86

1600 INSTALL STEEL PROTECTIVE POSTS, STEEL COVER + PAD, GROUT WELL - 2 BAGS TYPE I PORTLAND

10/4/86 — DATE

WGE — SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T10-2 | Location Coordinates N 396,417.4
E 1,655,868.2

Hole Size 12" NOMINAL Slot 0.010"

Screen Length 15' Mat'l SCH 40 PVC | Filter Materials COARSE BLAST SAND

Diameter 4" I.D. | Grout Type TYPE I PORTLAND

Casing Length 7.4' Mat'l SCH 40 PVC | Development CENTRIFUGAL PUMP - 110 GAL

Diameter 4" I.D. | Static Water Level + 4.38' MSL (10/19/86

Date Start 10/5/86 Finish 10/6/86 | Top of Well Elevation + 14.77' MSL

Contractor ESE Driller PAUL THOMAS Drill Type HOLLOW STEM AUGER

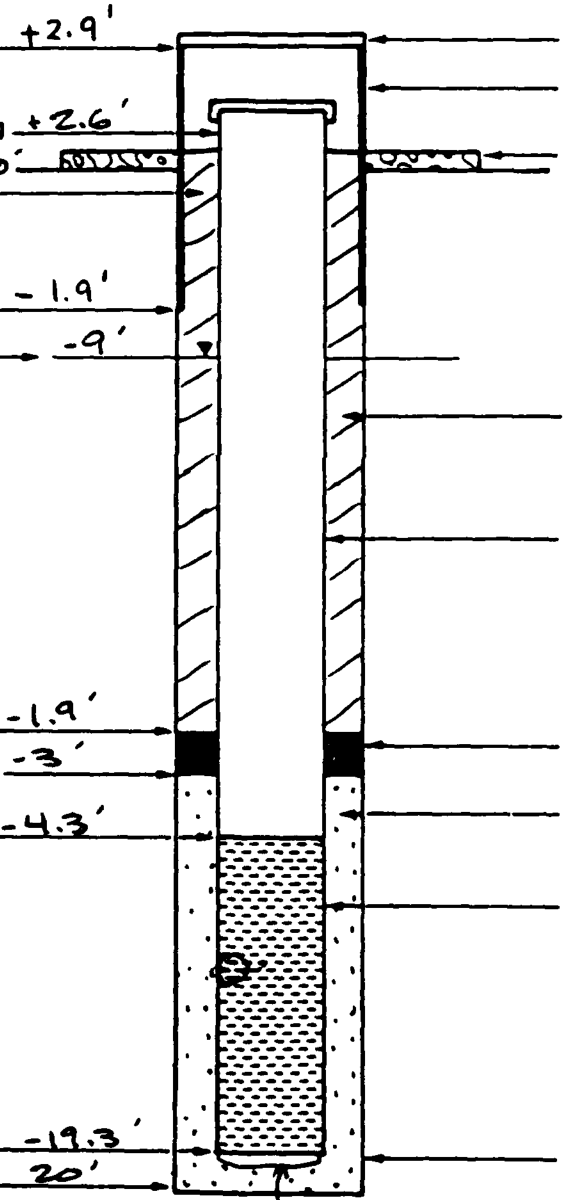
Depth (feet)	Sample # LENGTH	Lithology, Color USCS MUNSELL	Sketch of Construction	Standard Penetration Blow Count
0'-1.5'	1 0.7'	FILL - SHELL, ROCK FRAGS, CLAY FILL, GRAVEL CONCRETE FRAGS		37-35-50
1.5'-3.5'	2 0.3'	FILL - TOP 0.1' - CONCRETE FRAGS. SP - BOTTOM 0.2' - MED. GRAINED POORLY GRADED SAND 10YR 7/8 - YELLOW NOT PLASTIC, LOOSE, MOIST TO SL. MOIST	SEE ATTACHED	12-10-10-16
5'-8.5'	3	SP - SAME AS @ 1.5'		
8.5'-	4	SP/SM - SILTY MED. FINE GRAINED SAND ~10-15% SILT 10YR 4/2 - DARK GRAYISH BROWN NOT PLASTIC, DENSE, V. MOIST, COHESIVE		
9.5'		BECOMING SATURATED NEAR 9.5' + GRADING TO 10YR 3/1 - V. DK GRAY COLOR		
15'-20'		+ INCR. PLASTICITY + MOISTURE, INCR. CLAY CONTENT		
20'	-	END OF BORING F-42		

SOURCE: Environmental Science and Engineering, Inc., 19

MONITOR WELL CONSTRUCTION

Logged By: W. Elliot
Drilling Contractor: ESE
Driller's Name: [illegible]
Well Number: TO-2
Client: OEHL - Tyndall AFB
Location: [illegible] FTA
Job Number: 86-378
Date/Time: Start 10/3/86 Finish 10/6/86
Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Depth label	Value
Top of Protective Casing	+2.9'
Top of Well Casing	+2.6'
(Ground)	0'
Top of Cement	
Bottom of Protective Casing	-1.9'
Ground Water	-9'
Top of Bentonite Seal	-1.9'
Top of Gravel Pack	-3'
Top of Screen	-4.3'
Bottom of Screen	-19.3'
Total Depth of Bore Hole	20'

Locking Cap

Protective Pipe
Type, Diameter: Steel 6"

Cement/Gravel Pad

Type of Grout: Type I Portland

Casing:
Type: Sch 40 PVC (Tri-Loc)
Diameter: 4" I.D.

Couplings:
Type: Flush Threaded
Number: 3
Depths: -9.3', -4.3', +0.7'

Type of Plug: Bentonite Pellets

Gravel Pack:
Material: Coarse Blast Sand

Screen:
Type: SCH 40 PVC (Tri-Loc)
Diameter: 4" I.D.
Length: 15'
Slot Size: 0.010"

Bore Hole Diameter: 12" Nominal

Threaded Bottom plug

NOT TO SCALE

Boring No. J10-2 SHEET 1 OF 1

10/5/86

0815 LOADING SUPPLIES @ STORAGE BLDG

0830 SETTING UP RIG ON SITE, UNLOADING

0850 FUELING RIG UP, CLEANING EQUIP.

0920 DROVE 18" SPLIT SPOON FROM 0' TO -1.5'

0925 DROVE 24" SPLIT SPOON FROM 1.5' TO 3.5'

0930 SETTING UP LEAD FLIGHT HOLLOW STEM AUGER (HSA) WITH RETRIEVABLE PLUG (6")

0935 OPEN HOLE + ADVANCE TO 5' - DRILLING THROUGH CONCRETE

0940 ADVANCING TO 10' - WATER TABLE ~ -9'

0945 ADVANCING TO 15'

0950 ADVANCING TO 20' - BOTTOM @ -18'

0955 ASSEMBLING PVC IN AUGER - 15' SCREEN, 5' SOLID, 2.5' RISER

1000 PVC CASING DOWN + SET @ - 19.3' 3.2' STICK UP

1005 ADDING SAND - SOUNDED @ -3' AFTER 6 1/2 BAGS

1010 ADDING PELLETS - SOUNDED @ -1.9' AFTER 1 BUCKET

1015 SAWING OFF RISER FOR 2.6' STICK UP

WELL IS RECHARGING VERY SLOWLY

1030 PACK UP WASH OFF AUGERS

1040 LEAVE SITE

10/6/86

1700 - INSTALL PROT. POSTS, STEEL COVER, PAD, + GROUT WELL W/ TYPE I PORTLAND (2 BAGS)

10/5/86 WGE

DATE SIGNED

F-44

SOURCE: Environmental Science and Engineering, Inc., 198(

Boring No. T 10-3 | Location Coordinates N 396,173.0
Hole Size 12" NOMINAL | Slot 0.010" | E 1,655,573.1
Screen Length 15' | Mat'l SCH 40 PVC | Filter Materials COARSE BLASTING SAND
Diameter 4" I.D. | Grout Type TYPE I PORTLAND
Casing Length 7.2' | Mat'l SCH 40 PVC | Development CENTRIFUGAL PUMP - 180 GAL
Diameter 4" I.D. | Static Water Level +8.58' MSL (10/19/86)
Date Start 10/4/86 | Finish 10/6/86 | Top of Well Elevation +13.35' MSL
Contractor ESE | Driller PAUL THOMAS | Drill Type HOLLOW STEM AUGER

Depth (feet)	Sample #	Sample Length	Lithology, Color USCS MUNSELL	Sketch of Construction	Standard Penetration Blow Count
0'-1.5'	1	1.5'	SP/SM - SILTY MED.F. TO V.FINE GR. SAND ~10% SILT 10YR 6/4 - LT. YELSH. BROWN NOT PLASTIC, LOOSE, DRY TO SLIGHTLY	SEE ATACHED SHEET	3/2/4
1.5'-3.5'	2	2.0'	SP - MED.GR. QTZ SAND - NO FINES 10YR 8/1 - WHITE NOT PLASTIC, LOOSE, MOIST		5/6/6/9
4'					
5'			SP		
10'			SM - SILTY FINE GR. SAND ~30% SILT 2.5Y 3/2 - V.DK. GRAYISH BROWN SL. PLASTIC COHESIVE, SATURATED		
15'			SM/ML		
20'			SM/ML - SAME AS 15'		
20'			END OF BORING		

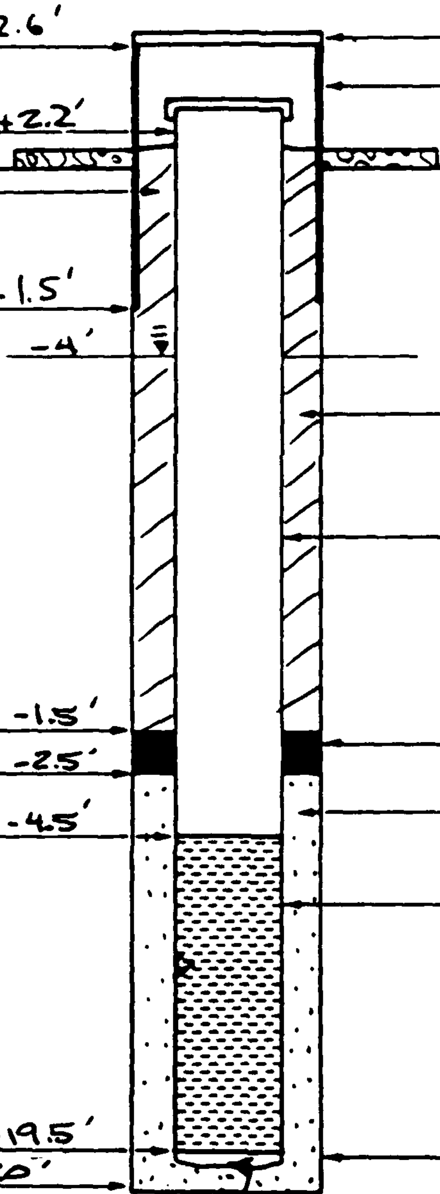
SOURCE: Environmental Science and Engineering, Inc., 1980

MONITOR WELL CONSTRUCTION

Logged By: W.G. ELLIOTT
Drilling Contractor: SSE
Driller's Name: PAUL THOMAS
Well Number: T10-3
Client: TYNDALL AFB
Location: SHELL BANK FIRE TRAINING
Job Number: 86-378
Date/Time: Start 10/14/86 Finish 10/14/86
Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):
ATTACHED

Depths in Reference to Ground Level

Top of Protective Casing +2.6'
Top of Well Casing +2.2'
0'
Top of Cement
Bottom of Protective Casing -1.5'
Ground Water -4'
Top of Bentonite Seal -1.5'
Top of Gravel Pack -2.5'
Top of Screen -4.5'
Bottom of Screen -19.5'
Total Depth of Bore Hole -20'



Locking Cap
Protective Pipe Type, Diameter STEEL 6"
Cement/Gravel Pad
Type of Grout TYPE I PORTLAND
Casing:
Type SCH 40 PVC (TRI-LOC®)
Diameter 4" I.D.
Couplings:
Type FLUSH THREADED
Number 3
Depths -9.5', -4.5, +0.5'
Type of Plug 1/2 BENTONITE PELLETS
Gravel Pack:
Material COARSE BLAST SAND
Screen:
Type SCH 40 PVC
Diameter 4" I.D.
Length 15'
Slot Size 0.010"
Bore Hole Diameter 12" NOMINAL

THREADED PVC BOTTOM PLUG

NOT TO SCALE

Boring No. T10-3 SHEET 1 OF 1

10/4/86

1520 SETTING RIG UP + UNPACKING TOOLS + SUPPLIES

1525 DROVE 18" SPLIT SPOON 0 to 1.5' (NO HNU RESPONSE)

1530 DROVE 24" SPL. SPOON 1.5' TO 3.5' DEPTH

1535 SET UP HOLLOW STEM AUGER w/ RETRIEVABLE BOTTOM PLUG (STEEL, w/ CHAIN) 6" ID

OPEN HOLE + ADVANCE TO 5' - MAKING A 11" HOLE

1540 ADVANCING TO 10'

1550 ADVANCING TO 15', ADVANCE TO 20' - BOTTOM -

1555 ASSEMBLE PVC + SET CASING IN HOLLOW STEM - 15' SCREEN, 7.5' BLANK (SP 22.5)

1600 SET WELL @ -19.5' BGS - 3.5' STICK UP, PULL AUGERS OUT

SANDING - HOLE COLLAPSED, SAND @ -2.5 AFTER 1 1/2 BAGS

1610 ADDING BENTONITE PELLETS - SEAL @ -1.5' AFTER 1 1/2 BUCKETS

1620 CUT OFF PVC FOR 2.1' STICK UP

1630 PACKING UP, LOADING AUGER

1645 TAKE RIG TO WASH RACK TO DE-CON.

10/6/86

1500 - INSTALL PROT. POSTS, PAD + STEEL COVER - GROUT WELL

w/ TYPE I PORTLAND CEMENT (2 x 100 LB BAGS)

10/4/86 WGF

DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 1980

Boring No. T11-1 | Location Coordinates N 391,709.8
E 1,662,222.5

Hole Size 12" NOMINAL Slot 0.010"

Screen Length 15' Mat'l SCH 40 PVC | Filter Materials COARSE BLAST SAND

Diameter 4" I.D. | Grout Type TYPE I PORTLAND

Casing Length 7.3' Mat'l SCH 40 PVC | Development CENTRIFUGAL PUMP - 183 GAL

Diameter 4" I.D. | Static Water Level +6.95' MSL (10/19/86)

Date Start 10/5/86 Finish 10/6/86 | Top of Well Elevation +13.24' MSL

Contractor ESE Driller PAUL THOMAS Drill Type HOLLOW STEM AUGER

Depth (feet)	Sample #	Sample Length	Lithology, Color USCS / MUNSELL	Sketch of Construction	Standard Penetration Blow Count
0'-1.5'	1	0.6	SP/SM - POORLY GRADED FINE GRAIN TO V. FINE GRAINED SAND - ~9% SILT + FINE ORGANIC MATERIAL 5Y5/1 - GRAY - NOT PLASTIC, LOOSE TO DENSE, DRY	SEE ATTACHED SHEET	4-8-10
1.5'-3.5	2	1.1	SP/SM SAME AS ABOVE, BECOMING MOIST TO VERY MOIST @ ~3.5'		6-8-10-12
~4'					
5'			SM - SAME AS ABOVE, EXCEPT COLOR IS 10YR5/3 - BROWN		
10'					
15'					
20'			SM		
20'			END OF BORING		

F-48

SOURCE: Environmental Science and Engineering, Inc., 19

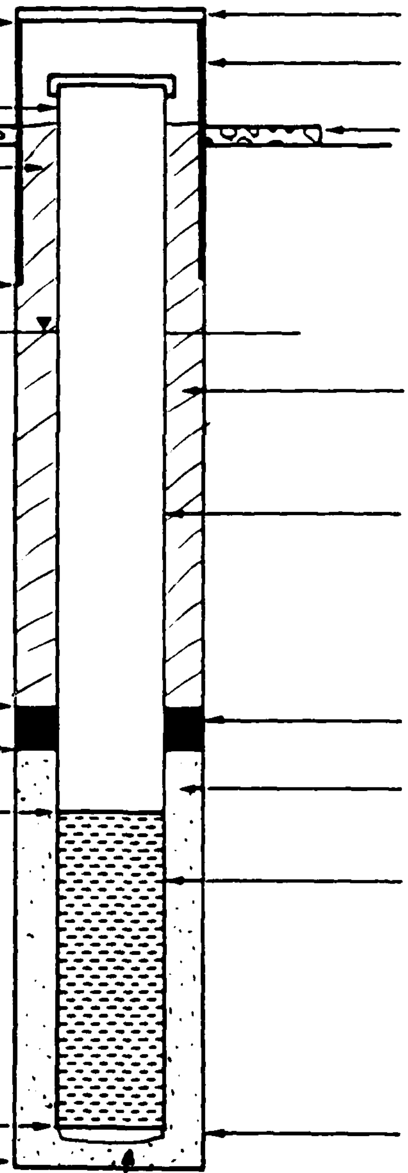
MONITOR WELL CONSTRUCTION

Logged By: W. ELLIOTT
Drilling Contractor: ESE
Driller's Name: PAUL THOMAS
Well Number: T11-1

Client: OEHL / TYNDALL AFB
Location: ACTIVE FTA
Job Number: 86-378
Date/Time: Start 10/3/86 Finish 10/6/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



- Top of Protective Casing +2.6'
- Top of Well Casing +2.3'
- 0'
- Top of Cement
- Bottom of Protective Casing -2.0'
- Ground Water -4'
- Top of Bentonite Seal -2'
- Top of Gravel Pack -3'
- Top of Screen -4.5'
- Bottom of Screen -19.5'
- Total Depth of Bore Hole -20'

THREADED BOTTOM PLUG

- Locking Cap
- Protective Pipe
  - Type, Diameter STEEL, 6"
- Cement/Gravel Pad
- Type of Grout TYPE I PORTLAND
- Casing:
  - Type SCH 40 PVC (TRI-LOC®)
  - Diameter 4" I.D.
- Couplings:
  - Type FLUSH THREADED
  - Number 3
  - Depths -9.5', -4.5', +0.5'
- Type of Plug 1/2" BENTONITE PELLETS
- Gravel Pack:
  - Material COARSE BLAST SAND
- Screen:
  - Type SCH 40 PVC (TRI-LOC)
  - Diameter 4" I.D.
  - Length 15'
  - Slot Size 0.010"
- Bore Hole Diameter 12" NOMINAL

NOT TO SCALE

Boring No. T11-1 SHEET 1 OF 1

10/5/86

1730 SETTING RIG UP ON SITE, UNLOADING
1745 DROVE 18" SPLIT SPOON FROM 0 TO 1.5'
1750 DROVE 24" SPOON FROM 1.5' TO 3.5', OPEN HOLE W/ HSA WITH PLUG
1755 ADVANCED TO 5', 10'
1800 ADVANCED TO 15', 20', ASSEMBLE PVC (15' SCREEN, 5' SOLID, 2.5' RISER)
1805 SET CASING IN HOLE TO - , PULL AUGERS
1807 ADDING SAND - SOUNDED @ -3' AFTER 3 BAGS STICK UP 2.5'
1810 ADDING BENTONITE PELLETS - SOUNDED @ -2' AFTER 1/2 BUCKET, ADD H2O
1815 WASHING OFF AUGERS, PACKING UP EQUIP.

10/6/86

1740 INSTALLING PROTECTIVE POSTS + STEEL COVER, PAD -
GROUT WELL W/ 2 BAGS TYPE I PORTLAND CEMENT

10/5/86 DATE
WGE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198(

Boring No. TII-2
Hole Size 12" NOMINAL Slot 0.010"
Screen Length 15' Mat'l SCH 40 PVC
Diameter 4" I.D.
Casing Length 6.7' Mat'l SCH 40 PVC
Diameter 4" I.D.
Date Start 10/5/86 Finish 10/7/86
Contractor ESE Driller PAUL THOMAS

Location Coordinates N 391,571.3
E 1,662,569.1
Filter Materials COARSE BLAST SAND
Grout Type TYPE I PORTLAND
Development CENTRIFUGAL PUMP-175 G
Static Water Level + 4.35' MSL (10/19
Top of Well Elevation + 12.97' MSL
Drill Type HOLLOW STEM AUG

Depth (feet)	Sample # LENGTH	Lithology, Color USCS MUNSELL	Sketch of Construction	Standard Penetrat Blow Count
0'-1.5'		SM/SP		4-5-6
1.5'-3.5'		SM/SP	SEE Attached Sheet	15-16-22-3
5'				
9'				
10'		SM		
15'				
20'		SM		
20'		END OF BORING		

F-51

SOURCE: Environmental Science and Engineering, Inc.,

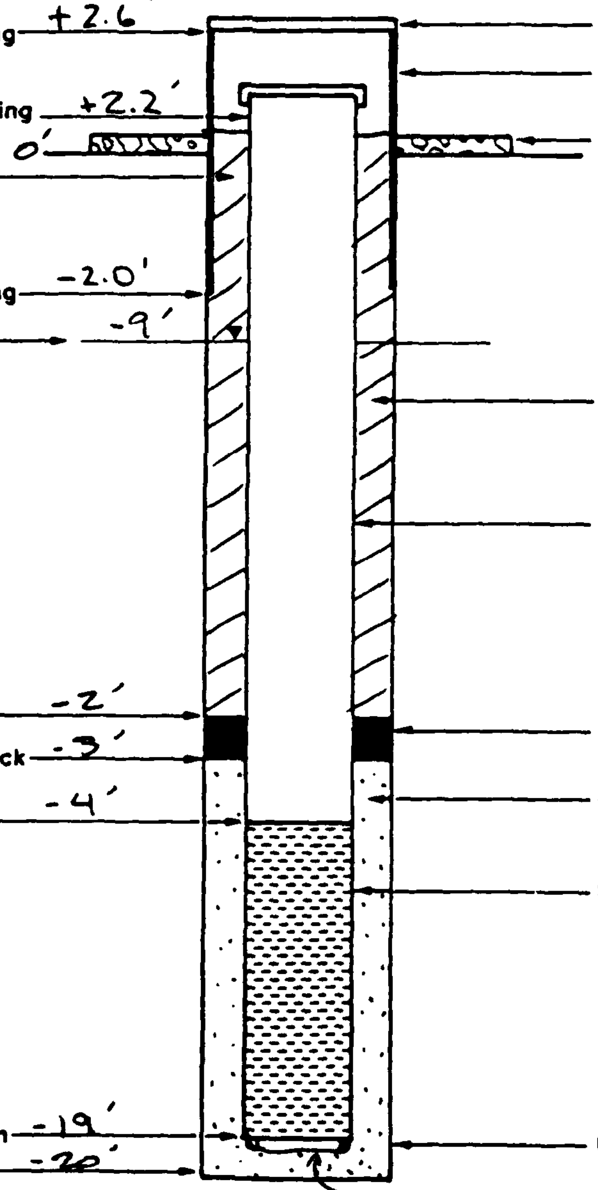
MONITOR WELL CONSTRUCTION

Logged By: W. Elliott
Drilling Contractor: ESE
Driller's Name: Paul Thomas
Well Number: T11-2

Client: OEHL- Tyndall AFB
Location: Active FTA
Job Number: 86-378
Date/Time: Start 10/3/86 Finish 10/7/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



Top of Protective Casing +2.6'
Top of Well Casing +2.2'
0'
Top of Cement
Bottom of Protective Casing -2.0'
Ground Water -9'
Top of Bentonite Seal -2'
Top of Gravel Pack -3'
Top of Screen -4'
Bottom of Screen -19'
Total Depth of Bore Hole -20'

Locking Cap
Protective Pipe
Type, Diameter STEEL 6"
Cement/Gravel Pad
Type of Grout TYPE I PORTLAND
Casing:
Type SCH 40 PVC (TRI-LOC)
Diameter 4" I.D.
Couplings:
Type FLUSH THREADED
Number 3
Depths -9', -4', +1'
Type of Plug BENTONITE PELLETS
Gravel Pack:
Material COARSE BLAST SAND
Screen:
Type SCH 40 TRI LOC PVC
Diameter 4" I.D.
Length 15'
Slot Size 0.010"
Bore Hole Diameter 12" NOMINAL

THREADED BOTTOM PLUG

NOT TO SCALE

Boring No. T11-2 SHEET 1 OF 1

10/5/86

1830 SET RIG UP ON SITE, UNLOAD
1840 DROVE SPLIT SPOON 0 TO 1.5', DROVE 24" SPOON FROM 1.5 TO 3.5'
1845 OPEN HOLE W/ HSA WITH RETRIEVABLE BOTTOM PLUG (6" I.D.), ADVANCE TO 5'
1850 ADVANCE TO 10' WATER TABLE ~ -9'
1855 ADVANCE TO 15'
1900 ADVANCE TO 20' - INSTALL CASING (15' SCREEN, 5' SOLID, 2.5' RISER)
1905 INSTALL SAND PACK + PULL AUGERS (@ -3' AFTER 4 BAGS)
1910 INSTALL PELLETS (@ - 2' AFTER 1/2 BUCKET) 19' TO - 2.5' STICK UP
1920 BREAK AUGERS DOWN (SAWED OFF)
1925 CLEAN UP, PACK UP
1930 LEAVE SITE FOR DAY

10/7/86

1650 GROUTED WELL, INSTALLED STEEL COVER + POSTS

10/7/86 WGE
DATE SIGNED

SOURCE: Environmental Science and Engineering, Inc., 198

Boring No. T11-3 Location Coordinates N 391,396.2

Hole Size 12" NOMINAL Slot 0.010" E 1,662,629.7

Screen Length 15' Mat'l SCH 40 PVC Filter Materials COARSE BLAST SAND

Diameter 4" I.D. Grout Type TYPE I PORTLAND

Casing Length 6.2' Mat'l SCH 40 PVC Development CENTRIFUGAL PUMP - 184 GA[L]

Diameter 4" I.D. Static Water Level +2.58' MSL (10/19/86)

Date Start 10/7/86 Finish 10/7/86 Top of Well Elevation +8.43' MSL

Contractor ESE Driller Paul Thomas Drill Type CME HSA

Depth (feet)	Sample # / Length	Lithology, Color USCS / Munsell	Sketch of Construction	Standard Penetration Blow Count
0'-1.5'	1 / 0.9	SM - POORLY GRADED SILTY SAND - ~10% SILT 10YR6/3 - PALE BROWN NOT PLASTIC, LOOSE TO DENSE, DRY TO MOIST, THIN BLACK BEDS OF OILY RESIDUE RANDOMLY DISPERSED	SEE ATTACHED SHEET	6-8-10
1.5'-3.5' (3.5')	2 / 1.1	SM - SAME AS @ 1.5', EXCEPT BECOMING SATURATED @ -3.5'		7-2-3-5
3.5' ↓		SM - SAME AS ABOVE		
-20'				
END OF BORING				

SOURCE: Environmental Science and Engineering, Inc., 19[86]

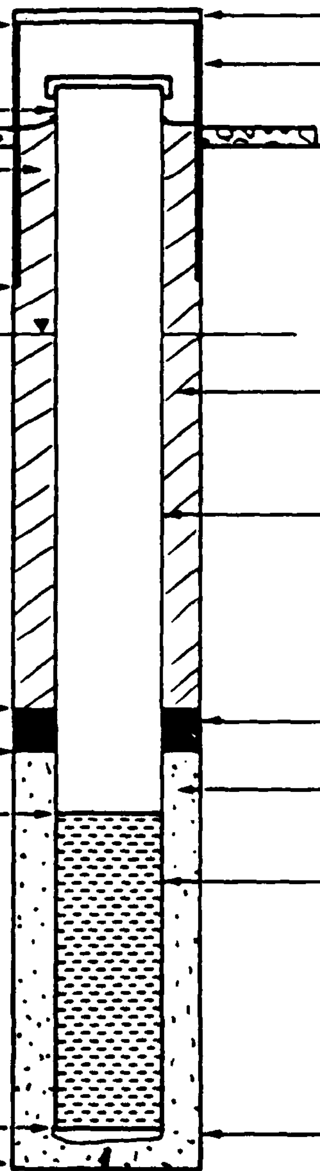
MONITOR WELL CONSTRUCTION

Logged By: W. ELLIOTT
Drilling Contractor: ESE
Driller's Name: PAUL THOMAS
Well Number: T11-3

Client: CEHL / TYNDALL AFB
Location: ACTIVE FTA
Job Number: 86-378
Date/Time: Start 10/7/86 Finish 10/7/86

Comments (Lost circulation interval, Water level changes, Hole collapse interval, etc.):

Depths in Reference to Ground Level



- Top of Protective Casing: +2.5'
- Top of Well Casing: +2.2'
- 0'
- Top of Cement
- Bottom of Protective Casing: -2.0'
- Ground Water: -3.5'
- Top of Bentonite Seal: -2'
- Top of Gravel Pack: -3'
- Top of Screen: -3.5'
- Bottom of Screen: -18.5
- Total Depth of Bore Hole: -20'

- Locking Cap
- Protective Pipe
  - Type, Diameter: STEEL, 6"
- Cement/Gravel Pad
- Type of Grout: TYPE I PORTLAND
- Casing:
  - Type: SCHED. 40 PVC (TRI-LOC)
  - Diameter: 4" I.D.
- Couplings:
  - Type: FLUSH THREADED
  - Number: 2
  - Depths: -8.5', -3.5'
- Type of Plug: 1/2" BENTONITE PELLETS
- Gravel Pack:
  - Material: COARSE BLAST SAND
- Screen:
  - Type: SCHED. 40 PVC (TRI-LOC)
  - Diameter: 4" I.D.
  - Length: 15'
  - Slot Size: 0.010"
- Bore Hole Diameter: 12" NOMINAL

THREADED BOTTOM PLUG 6

NOT TO SCALE

Boring No. TII-3 SHEET 1 OF 1

10/1/88

1400 - TAKE RIG TO FILL H2O TANK + CALL FOR SUPPLIES
1440 MOVE TO SITE
1450 SET UP RIG, LEVEL, UNLOAD EQUIP + SUPPLIES
1500 DROVE 18" SPLIT SPOON FROM 0' TO 1.5'
1505 DROVE 24" SPLIT SPOON FROM 1.5' TO 3.5'
1510 ADVANCED TO 10'
1515 ADVANCED TO 20' BOTTOMED - END OF BORING
1520 ASSEMBLED PVC (15' SCREEN, 5' SOLID,) INSTALLED IN AUGER, PULLED AUGER + PVC UP TO -18.5, 2' STICK UP
1530 PULLED AUGERS, BEGAN ADDING SAND - HOLE OPEN - SOUNDED @ -3' AFTER 8 BAGS
1540 ADDING BENTONITE PELLETS - SOUNDED @ -2' BGS AFTER 1 BUCKET
1545 CLEANING OFF AUGERS - DIGGING HOLES FOR PROTECTIVE POSTS + PAD.
1600 MIXING GROUT, PACKING UP AUGER FLIGHTS
1610 POURING GROUT, SET COVER + POSTS
1630 CLEANING UP SITE, MOVE RIG OFF SITE

10/2/86 WGE
DATE SIGNED

APPENDIX G

GEOPHYSICAL TRACING FOR ZONE 8

APPENDIX G

ELECTROMAGNETIC CONDUCTIVITY METHODS

An electromagnetic (EM) survey is a noncontact geophysical technique employing the use of two metallic coils and an electronics module. The transmitter coil is separated from the receiver coil by a specified distance. When energized, the transmitter coil induces circular eddy current loops into the earth, the magnitude of each current loop being a function of subsurface conditions. Each of these current loops generates a secondary magnetic field proportional to the value of the current flowing within the loop. A portion of this secondary magnetic field is intercepted by the receiver coil and results in an output voltage. The magnitude of this voltage is linearly related to the terrain (ground) conductivity (Evans, 1982). The units of conductivity measurements are millimhos per meter (mmhos/m).

Conductivities vary for different soil and rock types; thus, it is difficult to calibrate EM instruments to permit the determination of the absolute subsurface conductivity in unknown terrain. The subsurface is seldom uniform, more often being layered within the penetration depths of the instrument, further complicating calibration attempts. However, taking all of these factors into consideration, a qualitative reconnaissance of subsurface conditions can be conducted by noting the relative lateral changes along a traverse. An EM survey can be used as a rapid and effective method for evaluating subsurface characteristics and to infer the location and extent of potential subsurface contamination based on changes in the electric conductivity of the soils.

Elevated conductivity measurements can result from the presence of buried metal objects, making it essential that all locations with anomalous EM readings be cross-referenced with a magnetometer. A magnetometer detects perturbations in the geomagnetic field (for example, anomalies created by

buried ferromagnetic objects). The system utilized by Environmental Science and Engineering, Inc. (ESE), a fluxgate gradiometer, maintains the ability to sense vertical field gradients while remaining insensitive to horizontal gradient components (Evans, 1982). This allows the instrument to sense the vertical field of subsurface targets in the presence of horizontal interference targets such as steel fences.

APPENDIX G

Results of EM Survey at Area "6000" Landfill (Zone 8)

Location Destination	x-coordinate	y-coordinate	Specific Conductance (mmhos/m)	Comments
1	146	82	0.5	
2	145	77	2.1	
3	144	72	0.7	
4	143	67	0.1	
5	142	62	0.0	
6	141	57	0.0	
7	141	53	0.0	
8	140	48	0.0	
9	139	43	0.0	
10	138	38	0.0	
11	134	34	0.0	
12	131	31	0.0	
13	127	27	0.0	
14	124	24	0.0	
15	120	20	0.0	
16	124	31	0.0	
17	121	35	0.0	
18	168	85	4.6	*Close to FLA AVE.
19	163	85	0.7	
20	158	85	1.0	
21	153	85	0.3	
22	148	85	1.5	
23	143	85	0.0	
24	138	85	0.0	
25	133	85	0.0	
26	128	85	0.2	
27	123	85	0.9	
28	118	85	1.0	
29	113	85	0.0	
30	108	85	2.2	
31	103	85	1.6	
32	98	85	1.0	
33	168	80	7.5	*Close to FLA AVE
34	163	80	1.3	
35	153	80	1.2	
36	148	80	1.5	
37	143	80	2.2	
38	133	80	0.0	
39	128	80	0.6	
40	123	80	0.4	

APPENDIX G

Results of EM Survey at Area "6000" Landfill (Zone 8) (Continued, Page 2 of 4)

Location Destination	x-coordinate	y-coordinate	Specific Conductance (mmhos/m)	Comments
41	118	80	0.1	
42	112	80	1.7	*Evidence of
43	109	77	9.0	destroyed asphalt
44	105	73	52.0	road visible at
45	101	70	14.0	surface.
46	97	67	0.0	
47	93	69	0.7	
48	88	70	5.2	*remnants of asphalt road
49	83	71	2.7	*measured=0.0 approx. 5 ft away
50	87	74	0.0	
51	91	76	0.0	
52	96	79	3.2	*measured=0.0 approx. 10 ft away
53	80	67	0.0	
54	77	63	0.0	
55	74	59	0.0	
56	70	61	0.0	
57	66	64	0.0	
58	62	67	0.0	
59	84	66	1.4	
60	85	61	0.0	
61	85	56	0.0	
62	86	51	0.0	
63	84	47	0.0	
64	82	42	0.3	*asphalt at surface
65	79	38	0.0	
66	77	34	0.0	
67	74	29	0.9	
68	71	29	0.0	
69	66	28	0.0	
70	64	33	0.0	
71	62	38	0.0	
72	61	43	0.0	
73	63	47	0.0	
74	66	51	0.0	
75	71	51	0.0	
76	76	51	0.0	
77	81	51	1.8	*metal debris at surface
78	66	24	0.0	
79	65	19	5.2	*wire bundles at surface
80	65	14	0.0	
81	64	09	0.0	

APPENDIX G

Results of EM Survey at Area "6000" Landfill (Zone 8) (Continued, Page 3 of 4)

Location Destination	x-coordinate	y-coordinate	Specific Conductance (mmhos/m)	Comments
82	64	04	0.0	
83	61	28	0.0	
84	56	28	0.0	
85	51	27	0.0	
86	48	27	0.0	
87	48	22	0.0	
88	49	17	0.0	
89	49	12	0.0	
90	49	32	0.0	
91	50	37	0.0	
92	50	42	3.4	*magnetometer detects metal
93	51	47	2.4	*metal at both sites
94	52	52	0.0	
95	46	27	0.0	
96	41	27	0.0	
97	37	28	0.0	
98	38	32	0.0	
99	39	37	0.0	
100	41	42	0.0	
101	38	46	0.2	
102	35	51	1.5	
103	33	55	2.7	
104	30	60	1.9	
105	28	64	2.3	
106	23	61	1.6	
107	19	59	2.0	
108	15	56	1.6	
109	10	54	1.0	
110	06	51	1.5	
111	21	68	1.8	
112	26	71	1.8	
113	32	74	1.3	
114	37	77	1.8	
115	42	80	1.9	
116	48	84	1.6	
117	53	87	0.2	
118	59	90	0.5	
119	65	93	0.7	
120	76	96	0.2	
121	81	96	0.1	
122	86	96	0.2	

APPENDIX G

Results of EM Survey at Area "6000" Landfill (Zone 8) (Continued, Page 4 of 4)

Location Destination	x-coordinate	y-coordinate	Specific Conductance (mmhos/m)	Comments
123	91	96	0.3	
124	96	96	0.2	
125	106	96	0.9	
126	111	96	1.4	
127	116	96	2.8	
128	121	96	2.7	
129	126	96	2.1	
130	131	96	0.0	
131	141	96	1.0	
132	146	96	3.9	

Note: Results of the magnetometer survey along with comments from field observations.

Source: ESE, 1988.

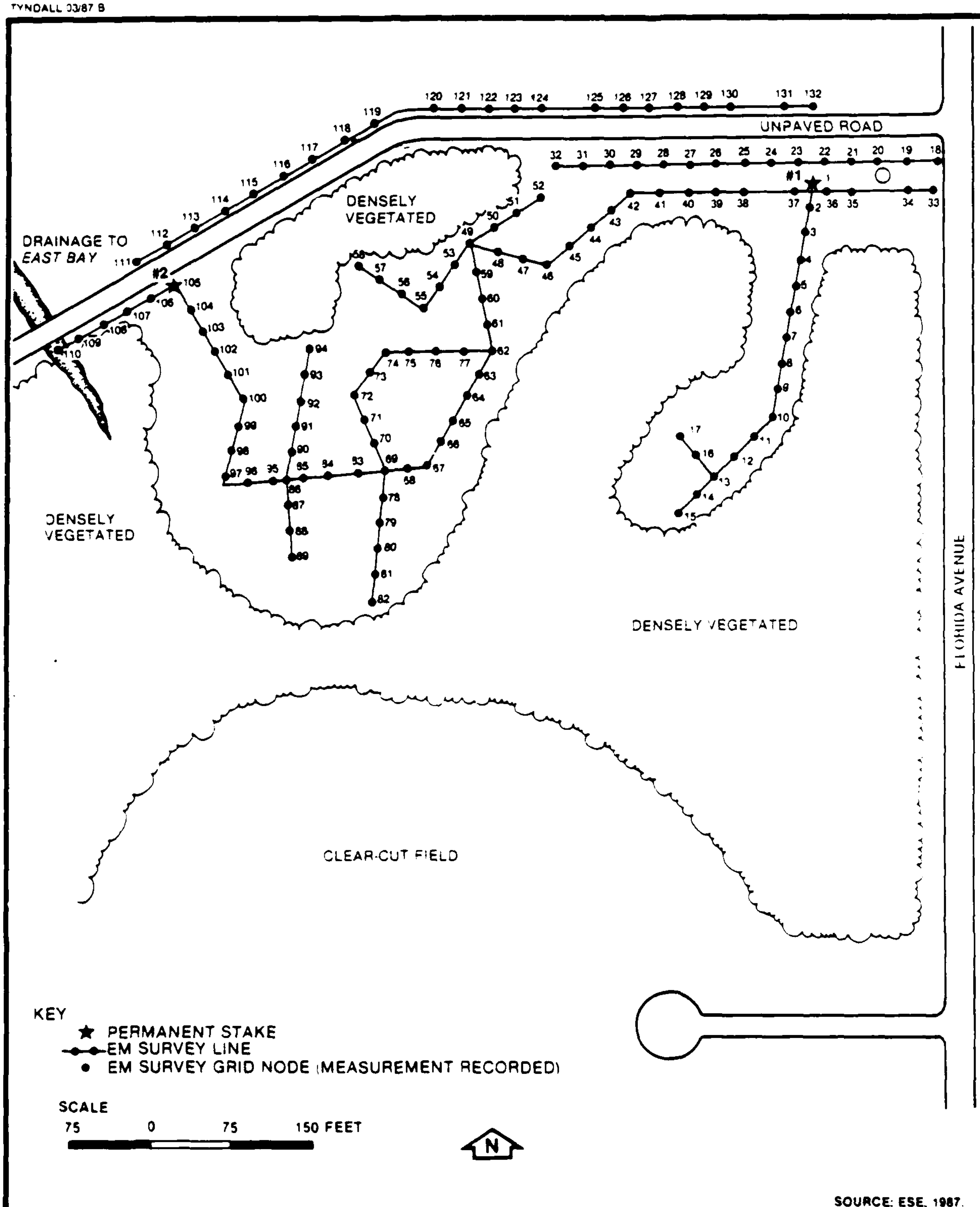


Figure G-1
ZONE 8 GEOPHYSICAL SURVEY

INSTALLATION RESTORATION PROGRAM
Tyndall Air Force Base

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APPENDIX H

PIEZOMETERS; MONITOR WELLS; SURFACE WATER, GROUND WATER,
SEDIMENT, AND SOIL SAMPLING LOCATIONS;
AND SAMPLE NUMBERING SYSTEM

APPENDIX H

PIEZOMETERS; MONITOR WELLS; SURFACE WATER, GROUND WATER, SEDIMENT, AND SOIL SAMPLING LOCATIONS; AND SAMPLE NUMBERING SYSTEM

LOCATION DESIGNATIONS

In an effort to maintain consistency with Stage 1 field work, ground water monitoring wells followed the same numbering system. The first characters of the well number represent the site location:

T = Tyndall AFB, and

LH = Lynn Haven DFSP.

The second digit is the zone number. The third digit is the specific well within the zone. Approximate well locations were designated in the Stage 2 scope of work (App. C) with some adjustments made in light of the piezometer water-level results. All well locations were staked and cleared for drilling through Base Civil Engineering prior to well installation. Both new and existing monitor well numbers and the ground water sampling site designations and corresponding sample numbers are presented in Table H-1.

The location designations for piezometers were selected by the Project Geologist based on the need for water-level data at a particular site. The first two characters for each piezometer number were PZ; the second digit is the zone number and the third digit is the specific piezometer within the zone. All piezometers were removed upon completion of the field work.

The sampling location designations for the sediment, surface water, and soil sampling sites were designated in the Stage 2 scope of work. The sediment and surface water sampling locations were strictly adhered to, whereas the soil sampling locations were modified at Zone 11 due to the

Table H-1. Monitor Well Numbers and Ground Water Sampling Zone Designations and Sample Numbers

Zone	Monitor Well #	Ground Water Sampling Site Designation	CLASS Sample Identification No.
2	1	GLH2-1	TYNDL2*1
2	2	GLH2-2	TYNDL2*2
2	3	GLH2-3	TYNDL2*3
2	4	GLH2-4	TYNDL2*4
2	7	GLH2-7	TYNDL2*5
*2	8	GLH2-8	TYNDL2*7
*2	9	GLH2-9	TYNDL2*8
3	1	GT3-1	TYNDL6*1
3	2	GT3-2	TYNDL6*2
3	3	GT3-3	TYNDL6*3
3	4	GT3-4	TYNDL6*4
*3	5	GT3-5	TYNDL6*5
*3	6	GT3-6	TYNDL6*6
*3	7	GT3-7	TYNDL6*7
5	1	GT5-1	TYNDL3*1
5	2	GT5-2	TYNDL3*2
5	3	GT5-3	TYNDL3*3
6	1	GT6-1	TYNDL4*1
6	2	GT6-2	TYNDL4*2
6	3	GT6-3	TYNDL4*3
*6	4	GT6-4	TYNDL4*4
*6	5	GT6-5	TYNDL4*5
7	1	GT7-1	TYNDL5*1
7	2	GT7-2	TYNDL5*2
7	3	GT7-3	TYNDL5*3
†7	--	BWT7-11	TYNDL5*9
8	1	GT8-1	TYNDL5*5
*8	3	GT8-3	TYNDL5*6
*8	4	GT8-4	TYNDL5*7
9	1	GT9-1	TYNDL6*9
9	2	GT9-2	TYNDL6*10
*9	3	GT9-3	TYNDL6*11
*9	4	GT9-4	TYNDL6*12

Table H-1. Monitor Well Numbers and Ground Water Sampling Zone Designations and Sample Numbers (Continued, Page 2 of 2)

Zone	Monitor Well #	Ground Water Sampling Site Designation	CLASS Sample Identification No.
*10	1	GT10-1	TYNDL4*7
*10	2	GT10-2	TYNDL4*8
*10	3	GT10-3	TYNDL4*9
*11	1	GT11-1	TYNDL4*11
*11	2	GT11-2	TYNDL4*12
*11	3	GT11-3	TYNDL4*13

*Denotes new monitor well.
†Denotes base well No. 11.

Source: ESE, 1987.

existence of the non-penetrable concrete pad underlying the first training pit. The sediment, surface water, and soil sampling site designations and sample numbers are provided in Table H-2.

SAMPLE NUMBERING AND MANAGEMENT SYSTEM

CLASS SYSTEM

All water, soil, and sediment samples were tracked through ESE's Chemical Laboratory Analysis and Scheduling System (CLASS). Prior to the sampling trip, computer-generated sampling logsheets and sample container labels were provided by ESE's laboratory. Each sample was identified by a unique designation. An additional 1- or 2-digit alphanumeric code designated different sample fractions, with separate labels printed for each fraction. The sampling logsheets also served as chain-of-custody forms (see App. O). The sample designations were entered into the computer system prior to sampling to facilitate tracking of samples through analysis, QC review, and reporting of results. The unique sample identification designations are included in Tables H-1 and H-2.

GROUND WATER SAMPLE NUMBERING SYSTEM

Ground water samples were identified by an alphanumeric code as a station identification in addition to the unique sample designations (see Table H-1). This code appeared on all logsheets and sample labels, serving to identify the sample to those directly involved in the project. The first character "G" denotes a ground water sample; the next character(s) denotes the site location (T = Tyndall AFB; LH = Lynn Haven DFSP). The following character is the zone number, which is followed by the number of the specific well within the zone.

SURFACE WATER, SEDIMENT, AND SOIL SAMPLE NUMBERING SYSTEM

Each of these samples were identified by a code beginning with "SW" for surface water, "SD" for sediment, or "SO" for soil samples. This sample-type designation was followed by a site location code similar to the system used for ground water samples, with characters for facility (Tyndall AFB or Lynn Haven DFSP), zone, and specific site within the zone included in the code. These sampling site designations are presented in Table H-2.

Table H-2. Sediment, Surface Water, and Soil Sampling Zone Designation and Sediment Sample Numbers

Zone	Sediment/Surface Water/Soil Sampling Site Designation	CLASS Sample Identification No.
Sediment		
2	SDLH2-1	TYNDL7*3
11	SDT11-1	TYNDL7*1
11	SDT11-2	TYNDL7*2
Surface Water		
2	SWLH2-1	TYNDL2*9
11	SWT11-1	TYNDL4*14
11	SWT11-2	TYNDL4*15
Soil		
11	SOT11-1	TYNDL1*1
11	SOT11-2	TYNDL1*2
11	SOT11-3	TYNDL1*3

Source: ESE, 1987.

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APPENDIX I

ANALYTICAL DATA FOR BAY COUNTY WATER SUPPLY

City of Tallahassee
Water Quality Lab

Explanation of Report

The enclosed report(s) are for samples analyzed for one or more of the following synthetic organic chemical catagories as designated in FAC 17-22

Purgeable
Acid Fraction
Base/Neutral
Pesticide

Purgeable	For samples analyzed for the purgeable catagory, the individual compounds are listed in the report. NPD - No Peaks Detected BDL - Below Detection Limit
Acid Fraction Base/Nuetral	Unless a specific compound is listed in these catagories is found, only the catagory will be shown on the report with the designation NPD. If any compound which is a part of these catagories is present a "+" will appear next to the catagory and compounds found will be shown on the report.
Pesticides	This catagory is shown on the report as chlorinated Hydrocarbon Screen. Although shown as Chlorinated Hydrocarbons this report catagory includes the pesticides listed in 17-22. As with the Acid Fraction and Base/Neutral catagories only those compounds found will be reported.

```
****************************
* CITY OF TALLAHASSEE      *
* WATER QUALITY LAB        *
* 3805 Springhill Rd.      *
* Tallahassee, FL. 32304   *
* ------------------------ *
* HRS Lab ID # - 51097     *
* DER Lab ID # - EL0046    *
****************************
```

LAB LOG# - 28576
STATION CODE - NA
DESCRIPTION - BAY COUNTY WATER & WASTEWATER
COLLECTED - 10/23/84 TIME COLLECTED - NR
COLLECTED BY - NR
SAMPLING METHOD -GRAB

PARAMETER	RESULT	UNITS	Det. Limit
CHLOROFORM	31.1	ug/l	.647
BROMODICHLOROMETHANE	12.5	ug/l	.099
DIBROMOCHLOROMETHANE	NPD	ug/l	.121
BROMOFORM	NPD	ug/l	.118
1,1,1-TRICHLOROETHANE	NPD	ug/l	0.12
TRICHLOROETHENE	NPD	ug/l	0.11
TETRACHLOROETHENE	NPD	ug/l	0.05
METHYLENECHLORIDE	BDL	ug/l	1.42
1,2-DICHLOROETHANE	NPD	ug/l	2.7
CARBON TETRACHLORIDE	NPD	ug/l	0.06
ETHYLENE DIBROMIDE (EDB)	NPD	ug/l	.007
CHLORINATED HYDOCARBON SCREEN	NPD	ug/l	-----
BASE NEUTRAL METHOD 625	NPD	ug/l	-----
ACID FRACTION METHOD 625	NPD	ug/L	-----
CHLOROBENZENE	NPD	ug/l	-----
1,1-DICHLOROETHANE	NPD	ug/l	-----
1,1-DICHLOROETHENE	NPD	ug/l	-----
trans-1,2-DICHLOROETHENE	NPD	ug/l	-----
1,1,2,2-TETRACHLOROETHANE	NPD	ug/l	-----
1,1,2-TRICHLOROETHANE	NPD	ug/l	-----
BROMOMETHANE	NPD	ug/l	5
CHLOROETHANE	NPD	ug/l	5
2-Chloroethylvinyl ether	NPD	ug/l	5
CHLOROMETHANE	NPD	ug/l	5
1,2-Dichlorobenzene	NPD	ug/l	10
1,3-Dichlorobenzene	NPD	ug/l	10
1,4-Dichlorobenzene	NPD	ug/l	10
DICHLORODIFLUOROMETHANE	NPD	ug/l	5
1,2-Dichloropropane	NPD	ug/l	5
cis-1,3-Dichloropropene	NPD	ug/l	5
trans-1,3-Dichloropropene	NPD	ug/l	5
TRICHLOROFLUOROMETHANE	NPD	ug/l	5
ETHYLBENZENE	NPD	ug/l	5
VINYLCHLORIDE	NPD	ug/l	5
XYLENE(ortho,meta,para)	NPD	ug/l	5
BENZENE	NPD	ug/l	-----
TOLUENE	NPD	ug/l	-----

the water spigot

WATER AND WASTEWATER ANALYSIS
5806 HIGHWAY 22
PANAMA CITY, FLORIDA 32404
(904) 871-1900 - 871-1901
Laboratory I.D. 81148

System Name: Bay County Water Plant

Address: 3400 Transmitter

Sample Site: sink inside lab

Date and Time Collected March 27, 1986 12:35 p.m. Collector Stacey Brown

Check One: 1. ☐ Community Public Water System 2. ☐ Non-Community Public Water System

Check One: 1. ☐ Ground Water 2. ☐ Surface Water

Check One: 1. ☐ Raw 2. ☐ Treated

PARAMETER	RESULT	PARAMETER	RESULT	PARAMETER	RESULT
Arsenic as As	*0.001	Chloride as Cl	12.5	Total Hardness as $CaCO_3$	56
Barium as Ba	*0.10	Color*	3	Total Alkalinity as $CaCO_3$	20
Cadmium as Cd	*0.001	Copper as Cu	0.013	N.C.H. as $CaCO_3$	36
Chromium as Cr	*0.002	Corrosivity	-2.0	Bicarbonate as HCO_3	12
Lead as Pb	0.004	Foaming Agents	*0.01	Calcium as Ca	15.4
Mercury as Hg	*0.001	Hydrogen Sulfide	-	Magnesium as Mg	1.4
Selenium as Se	*0.001	Iron as Fe	0.03	Carbon Dioxide as CO_2	5.0
Silver as Ag	*0.001	Manganese as Mn	0.001	Bicarbonate as $CaCO_3$	20
Nitrate as N	0.04	Odor*	0	Carbonate as $CaCO_3$	0
Fluoride as F	0.06	pH*	7.0	Hydroxide as $CaCO_3$	0
Turbidity, *NTU	1.0	Sulfate as SO_4	24	Sodium as Na	4.4
		Total Solids	88		
Endrin	ND	Zinc as Zn	0.123	pHs*	
Lindane	ND			Stability Index* 2pHs-pH	
Methoxychlor	ND			Saturation Index* pH-pHs	
Toxaphene	ND				
2, 4-D	ND				
2, 4-5 TP Silvex	ND				
Trihalomethanes					

*less than
ND none detected

NOTE: *All results in mg/l except those denoted.
Analysis in accordance with Chapter 17-22 FAC, Section 104-105.
Methods are those listed in Standard Methods For The Examination of Water and Wastewater, 14th Edition, 1975.

Date and Time Received March 27, 1986 12:45 p.m. Date Reported

Kuntz 5/1

Trish Jackson

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APPENDIX J

PIEZOMETER WATER LEVELS

APPENDIX J

Table J-1. Piezometer Water-Level Measurements, September 30, 1986

Piezometer Designation	Top of Casing Elevation*	Depth to Water From TOC (ft)	Water-Table Elevation*
PZ6-1	21.24	4.34	16.90
PZ6-2	19.90	2.69	17.21
PZ8-1	10.79	4.20	6.59
PZ8-2	15.75	7.08	8.67
PZ9-3	27.64	6.72	20.92
PZ10-1	12.32	†	--
PZ10-2	13.43	8.20	5.23
PZ10-3	12.71	4.12	8.59
PZ11-1	12.18	4.37	7.81
PZ11-2	8.29	4.65	3.64
PZ11-3	8.82	5.00	3.82

*Elevations are given in feet relative to mean sea level.
†Dry to bottom of casing.

Source: ESE, 1987.

Table J-2. Piezometer Construction Summary

Well Designation	Total Length (ft)	Screen Length (ft)	Screened Interval* (ft)	Casing Length† (ft)	Casing Interval* (ft)
PZ6-1	13.0	5.0	-6.5 to -11.5	8.0	+1.5 to -6.5
PZ6-2	12.5	5.0	-6.0 to -11.0	7.5	+1.5 to -6.0
PZ8-1	13.6	10.0	-2.0 to -12.0	3.6	+1.6 to -2.0
PZ8-2	12.4	5.0	-4.5 to -9.5	7.4	+2.9 to -4.5
PZ9-3	18.0	10.0	-6.5 to -16.5	8.0	+1.5 to -6.5
PZ10-1	10.3	8.0	-0.5 to -8.5	2.3	+1.8 to -0.5
PZ10-2	17.3	10.0	-6.0 to -16.0	7.3	+1.3 to -6.0
PZ10-3	12.0	9.0	-1.5 to -10.5	3.0	+1.5 to -1.5
PZ11-1	11.3	10.0	-0.0 to -10.0	1.3	+1.3 to -0.0
PZ11-2	13.5	5.0	-7.0 to -12.0	8.5	+1.5 to -7.0
PZ11-3	13.5	5.0	-7.0 to -12.0	8.5	+1.5 to -7.0
TOTALS	147.4	82.0		65.4	

*Screened and cased intervals referenced to ground level.

Source: ESE, 1987.

APPENDIX K

MONITOR WELL WATER LEVELS

APPENDIX K
MONITOR WELL WATER LEVEL MEASUREMENTS

Well Designation	Date of Measurement	Top of Casing Elevation*	Depth to Water From Top of Casing (ft)	Water-Table Elevation*
LH2-1	10/22/86	10.1	6.41	3.7
LH2-2	10/22/86	6.8	4.90	1.9
LH2-3	10/22/86	6.6	5.11	1.5
LH2-4	10/22/86	7.8	6.03	1.8
LH2-7	10/22/86	8.5	5.61	2.9
LH2-8	10/22/86	8.83	6.15	2.68
LH2-9	10/22/86	7.80	6.20	1.60
T3-1	10/19/86	10.9	7.74	3.2
T3-2	10/19/86	8.9	6.53	2.4
T3-3	10/19/86	5.8	4.80	1.0
T3-4	10/19/86	7.8	5.11	2.7
T3-5†	10/17/86	7.28	6.10	1.18
T3-6†	10/17/86	7.88	6.55	1.33
T3-7	10/19/86	13.26	7.67	5.59
T5-1	10/19/86	13.6	8.98	4.6
T5-2	10/19/86	13.4	9.28	4.1
T5-3	10/19/86	12.6	7.97	4.6
T6-1	10/19/86	28.9	7.95	20.9
T6-2	10/19/86	24.6	4.70	19.9
T6-3	10/19/86	29.0	8.20	20.8
T6-4	10/19/86	26.22	5.71	20.51
T6-5	10/19/86	29.37	8.64	20.73
T7-1	**	13.3	—	—
T7-2	10/19/86	12.3	5.15	7.1
T7-3	10/19/86	10.9	4.10	6.8
T7-4	††	—	—	—
T8-1	10/19/86	15.7	7.03	8.7
T8-3	10/19/86	10.84	4.43	6.41
T8-4	10/19/86	14.24	6.71	7.53

APPENDIX K
MONITOR WELL WATER LEVEL MEASUREMENTS
(Continued, Page 2 of 2)

Well Designation	Date of Measurement	Top of Casing Elevation*	Depth to Water From Top of Casing (ft)	Water-Table Elevation*
T9-1	10/19/86	20.7	7.11	13.6
T9-2	10/19/86	22.6	6.65	15.9
T9-3	10/19/86	28.42	8.42	20.00
T9-4	10/19/86	23.94	8.84	15.10
T10-1	10/19/86	14.13	10.17	3.96
T10-2	10/19/86	14.77	10.39	4.38
T10-3	10/19/86	13.35	4.77	8.58
T11-1	10/19/86	13.24	6.29	6.95
T11-2	10/19/86	12.97	8.62	4.35
T11-3	10/19/86	8.43	5.85	2.58

*All elevations given in feet relative to mean sea level.
†Inaccessible—POL facility locked date of measurements.
**Inaccessible—well is on the flight line.
††Not a monitor well (Base Well No. 11).

Source: ESE, 1987.

APPENDIX L

MAP COORDINATES

APPENDIX L

COORDINATES AND TOP OF CASING ELEVATIONS FOR MONITOR WELLS INSTALLED DURING PHASE II, STAGE 1 AND 2 STUDIES AT TYNDALL AFB

Well Designation Number	UTM Coordinates		Elevation, Top of Casing (ft, msl)
	Northing	Easting	
*LH2-1	455765	1 629 479	10.9
*LH2-2	456030	1 629 600	6.8
*LH2-3	456024	1 630 191	6.6
*LH2-4	456019	1 630 806	7.8
*LH2-7	454821	1 630 885	8.5
†L.H. 2-8	455523.7162	1631897.6933	8.83
†L.H. 2-9	456019.5552	1631532.7703	7.80
* T3-1	398884	1655311	10.9
* T3-2	398863	1655474	8.9
* T3-3	398846	1655749	5.8
* T3-4	398124	1655575	7.8
† T.3-5	398638.5697	1655804.0827	7.28
† T.3-6	398456.3903	1655773.4899	7.88
† T.3-7	398428.4383	1655200.9359	13.26
* T5-1	398811	1654383	13.6
* T5-2	398955	1654358	13.4
* T5-3	398937	1654525	12.6
* T6-1	386396	1660116	28.9
* T6-2	386819	1660404	24.6
* T6-3	386328	1660440	29.0
† T.6-4	386657.7033	1660567.0850	26.22
† T.6-5	386272.4093	1660197.5984	29.37
* T7-1	387323	1663607	13.3
* T7-2	388044	1663875	12.3
* T7-3	387411	1664446	10.9

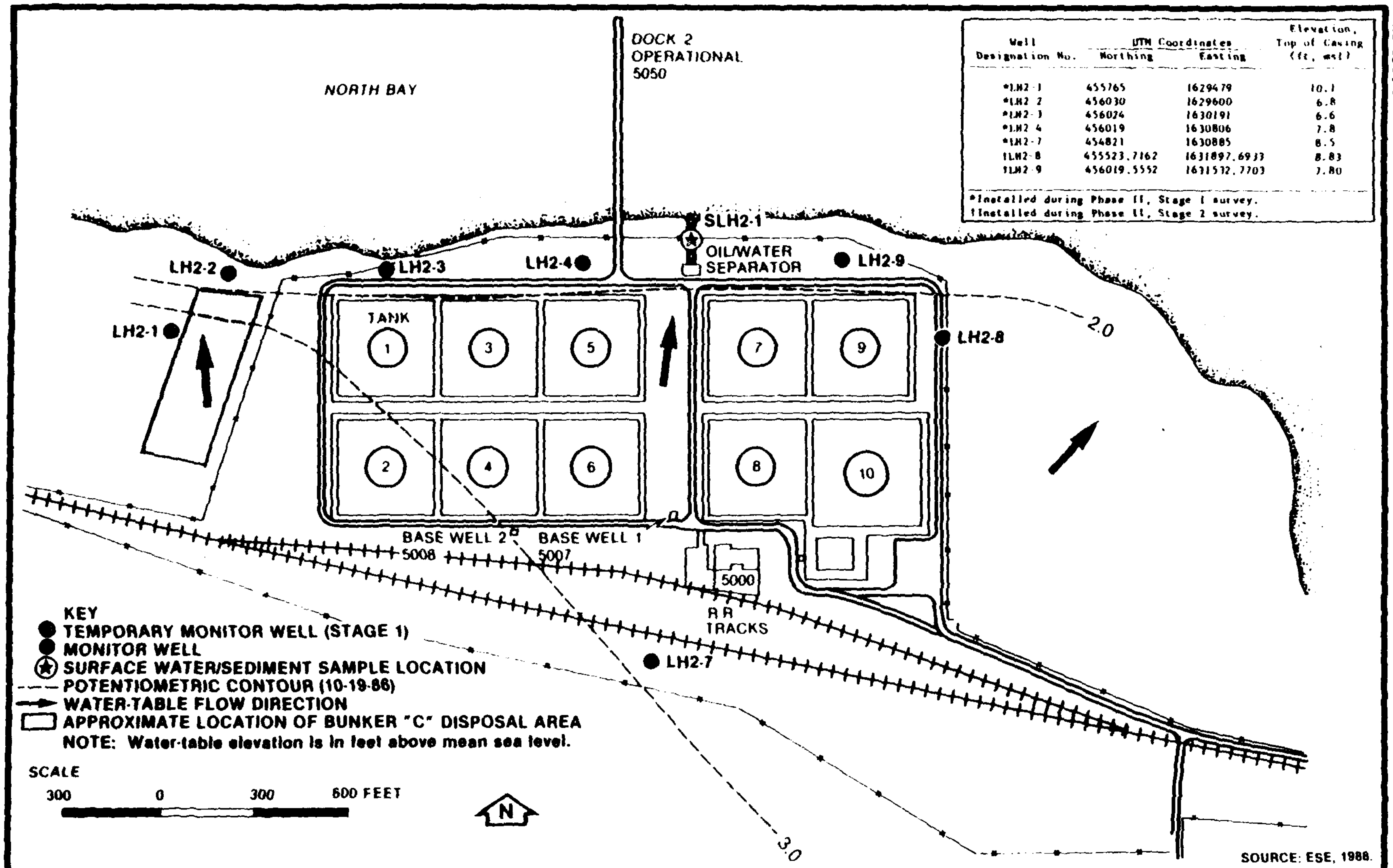
APPENDIX L

COORDINATES AND TOP OF CASING ELEVATIONS FOR MONITOR WELLS INSTALLED DURING PHASE II, STAGE 1 AND 2 STUDIES AT TYNDALL AFB
(Continued, Page 2 of 2)

Well Designation Number	UTM Coordinates Northing	Easting	Elevation, Top of Casing (ft, msl)
*T 8-1	397780	1654564	15.7
† T.8-3	397666.6763	1653978.8123	10.84
† T.8-4	397440.0116	1654020.7259	14.24
* T.9-1	391171	1655892	20.7
* T.9-2	390885	1656017	22.6
†T.9-3	390851.1563	1655686.1104	28.42
†T.9-4	391122.8751	1655803.4411	23.94
†T10-1	396724.8754	1655781.3198	14.13
†T10-2	396417.4401	1655868.1802	14.77
†T10-3	396173.0211	1655573.0608	13.35
†T11-1	391709.8313	1662222.4961	13.24
†T11-2	391511.2668	1662569.1190	12.97
†T11-3	391396.9281	1662629.6801	8.43

* Installed during Phase II, Stage 1 of survey.
† Installed during Phase II, Stage 2 of survey.

Sources: Thiess, et al., 1984.
ESE, 1987.



Well Designation No.	UTM Coordinates Northing	UTM Coordinates Easting	Elevation, Top of Casing (ft, msl)
*LH2-1	455765	1629479	10.1
*LH2-2	456030	1629600	6.8
*LH2-3	456024	1630191	6.6
*LH2-4	456019	1630806	7.8
*LH2-7	454821	1630885	8.5
†LH2-8	455523.7162	1631897.6933	8.83
†LH2-9	456019.5552	1631532.7703	7.80

*Installed during Phase II, Stage 1 survey.
†Installed during Phase II, Stage 2 survey.

Figure L-1
ZONE 2—LYNN HAVEN DFSP MONITOR WELL LOCATIONS

INSTALLATION RESTORATION PROGRAM
Tyndall Air Force Base

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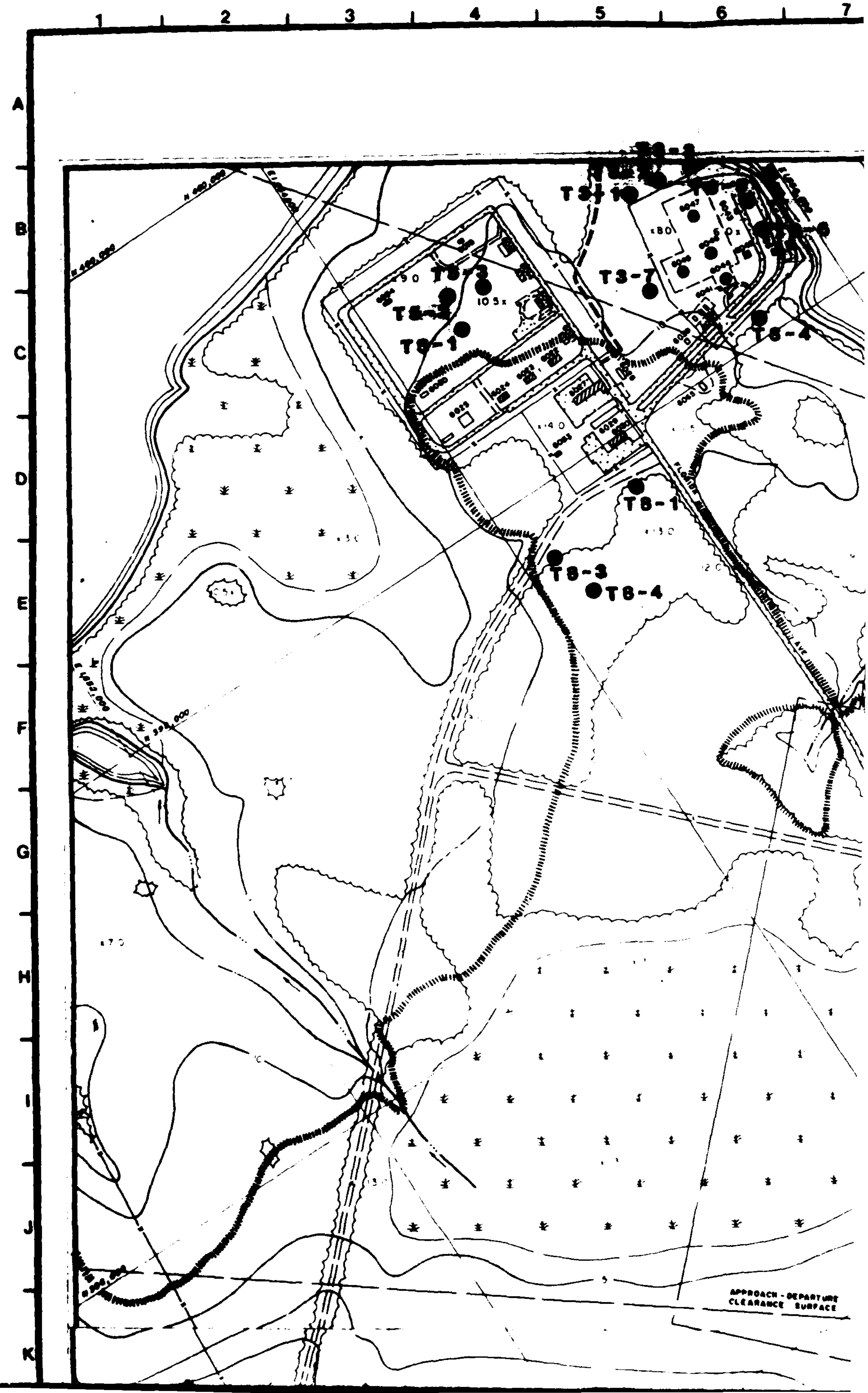
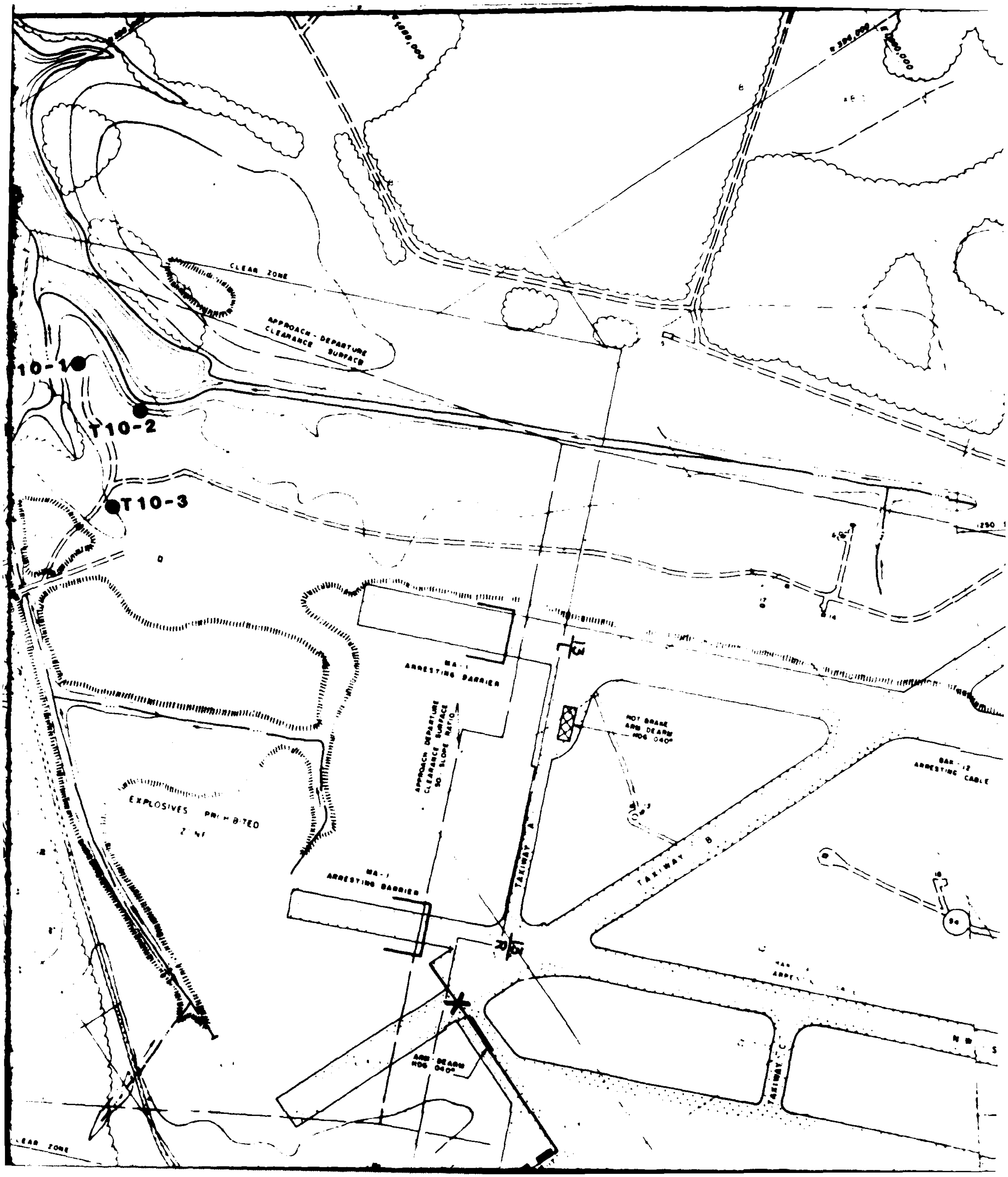
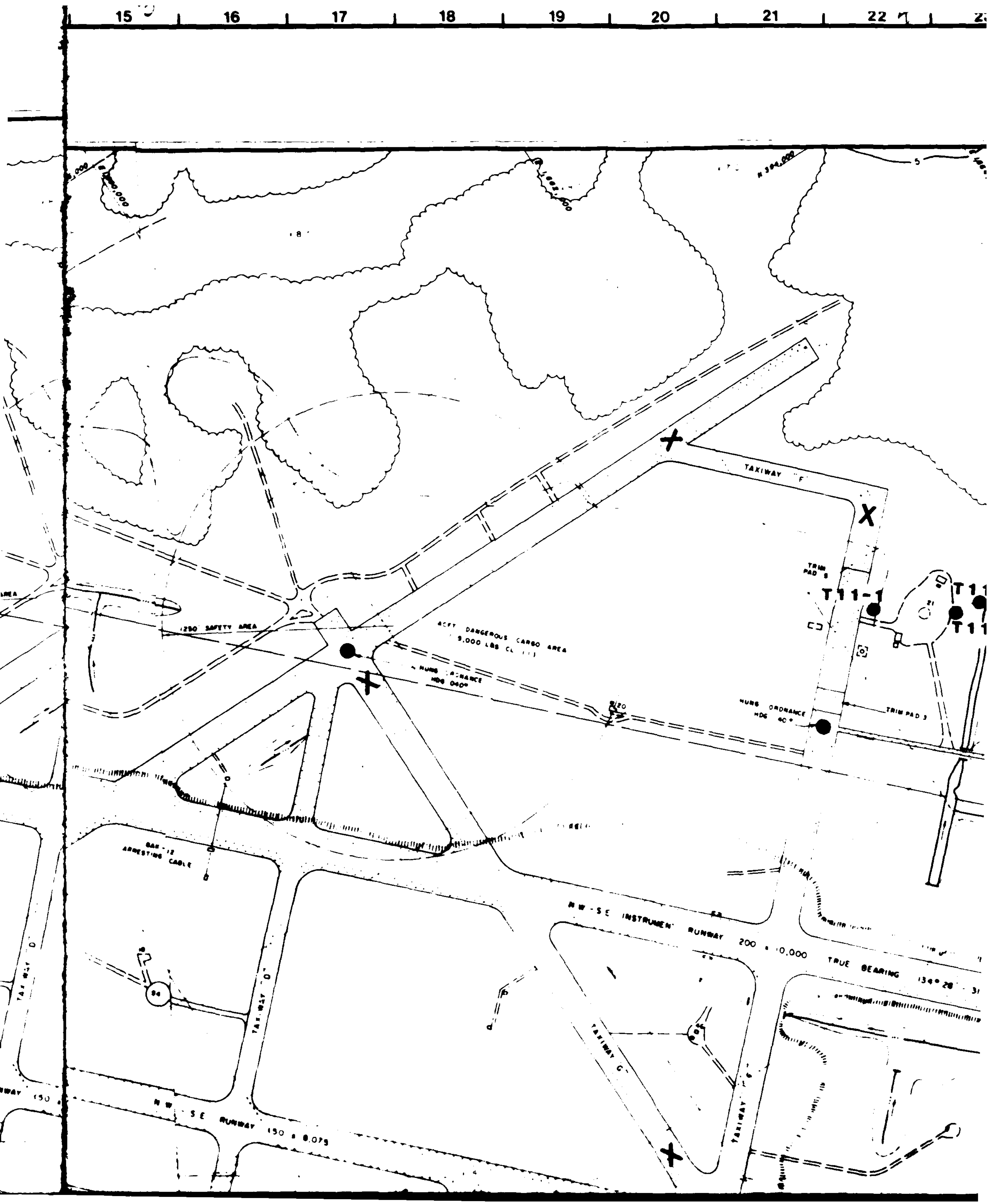


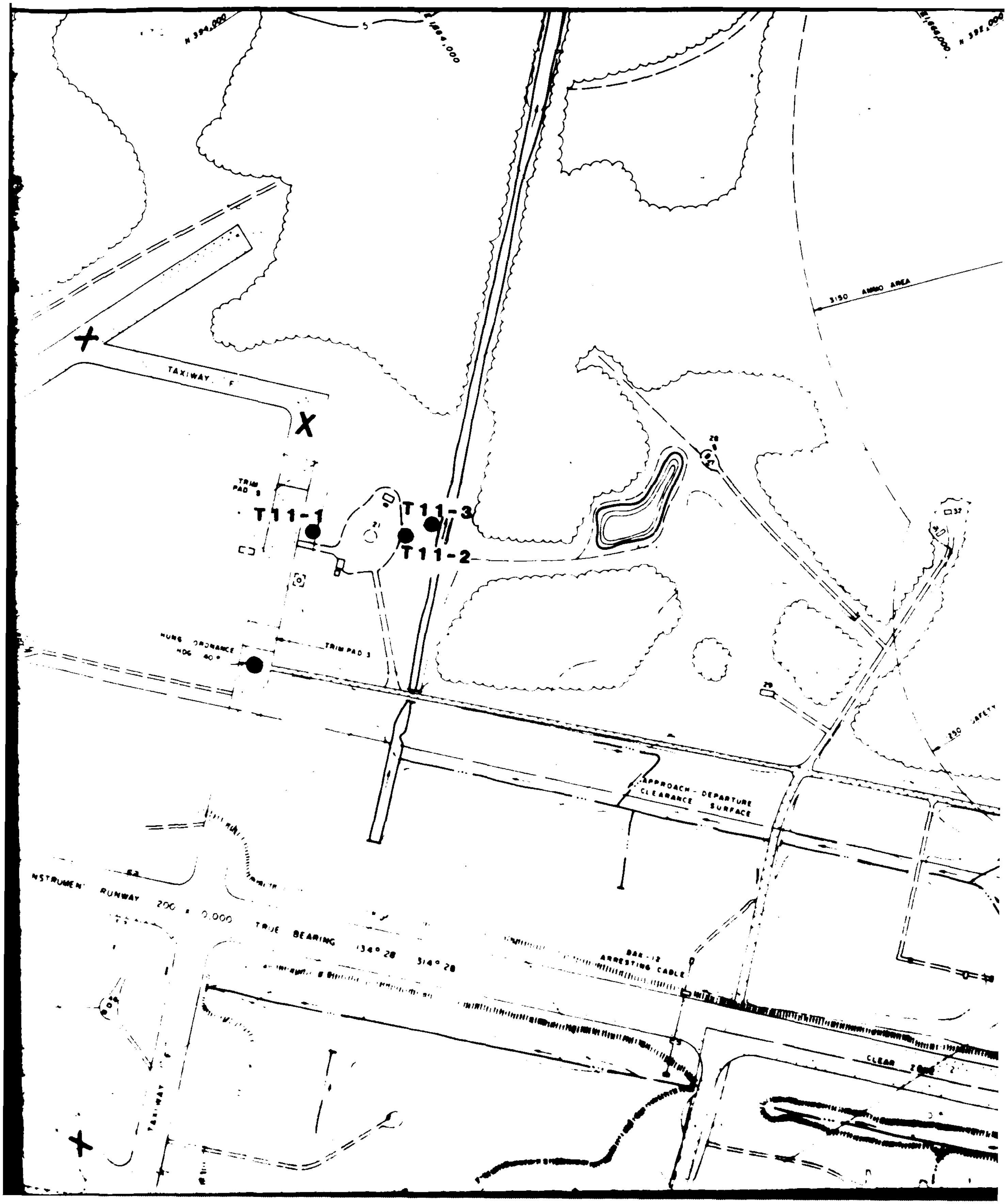
1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
K
T3-1
T3-3
T3-7
T8-1
T8-3
T8-4
APPROACH - DEPARTURE
CLEARANCE SURFACE

6

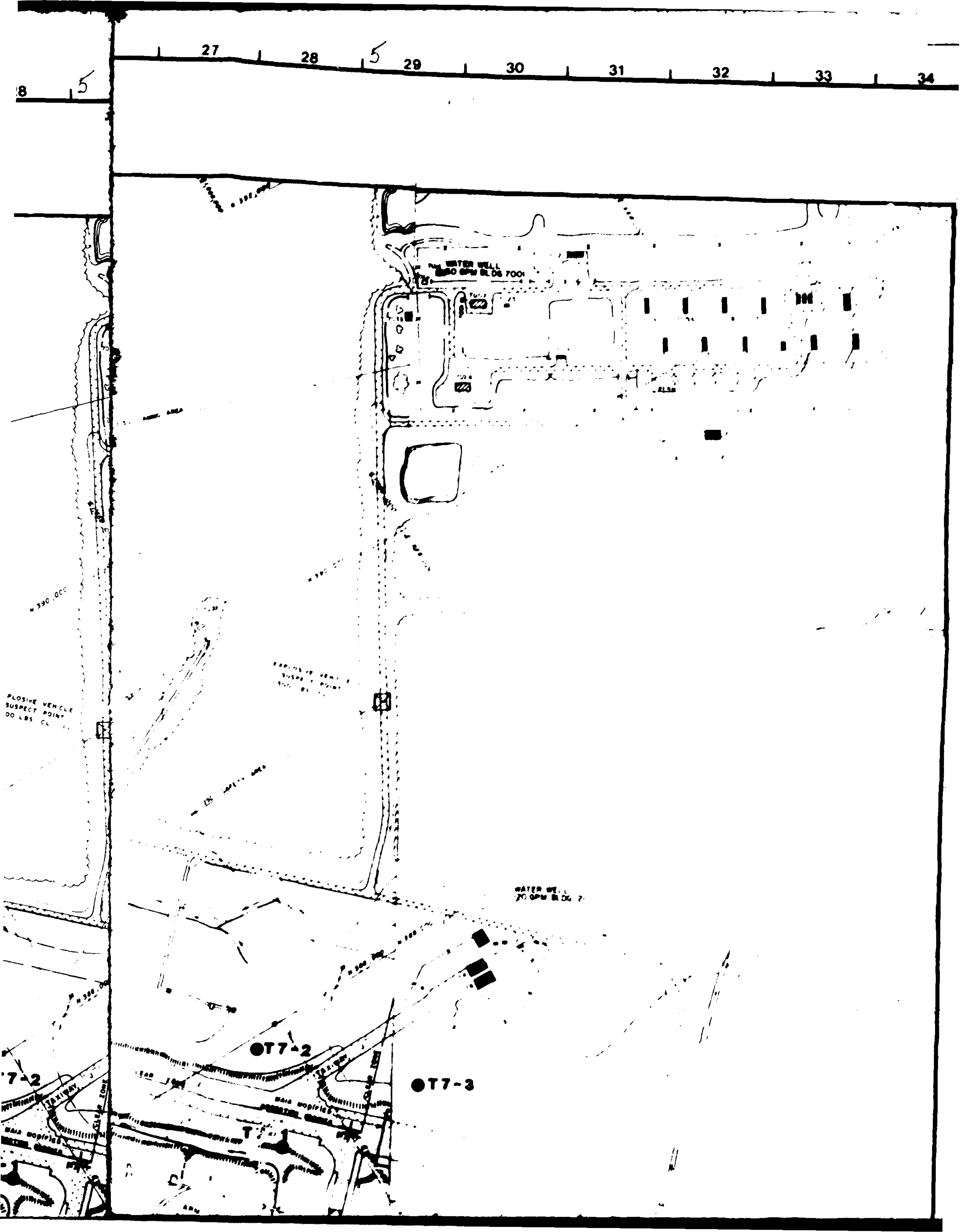


CLEAR ZONE
APPROACH - DEPARTURE CLEARANCE SURFACE
T10-1
T10-2
T10-3
MA-1 ARRESTING BARRIER
APPROACH DEPARTURE CLEARANCE SURFACE 50:1 SLOPE RATIO
HOT BRAKE ARR GEARM HDG 040°
BAK-12 ARRESTING CABLE
EXPLOSIVES PROHIBITED
TAXIWAY A
TAXIWAY B
TAXIWAY C
MA-1 ARRESTING BARRIER
ARR GEARM HDG 040°
CLEAR ZONE

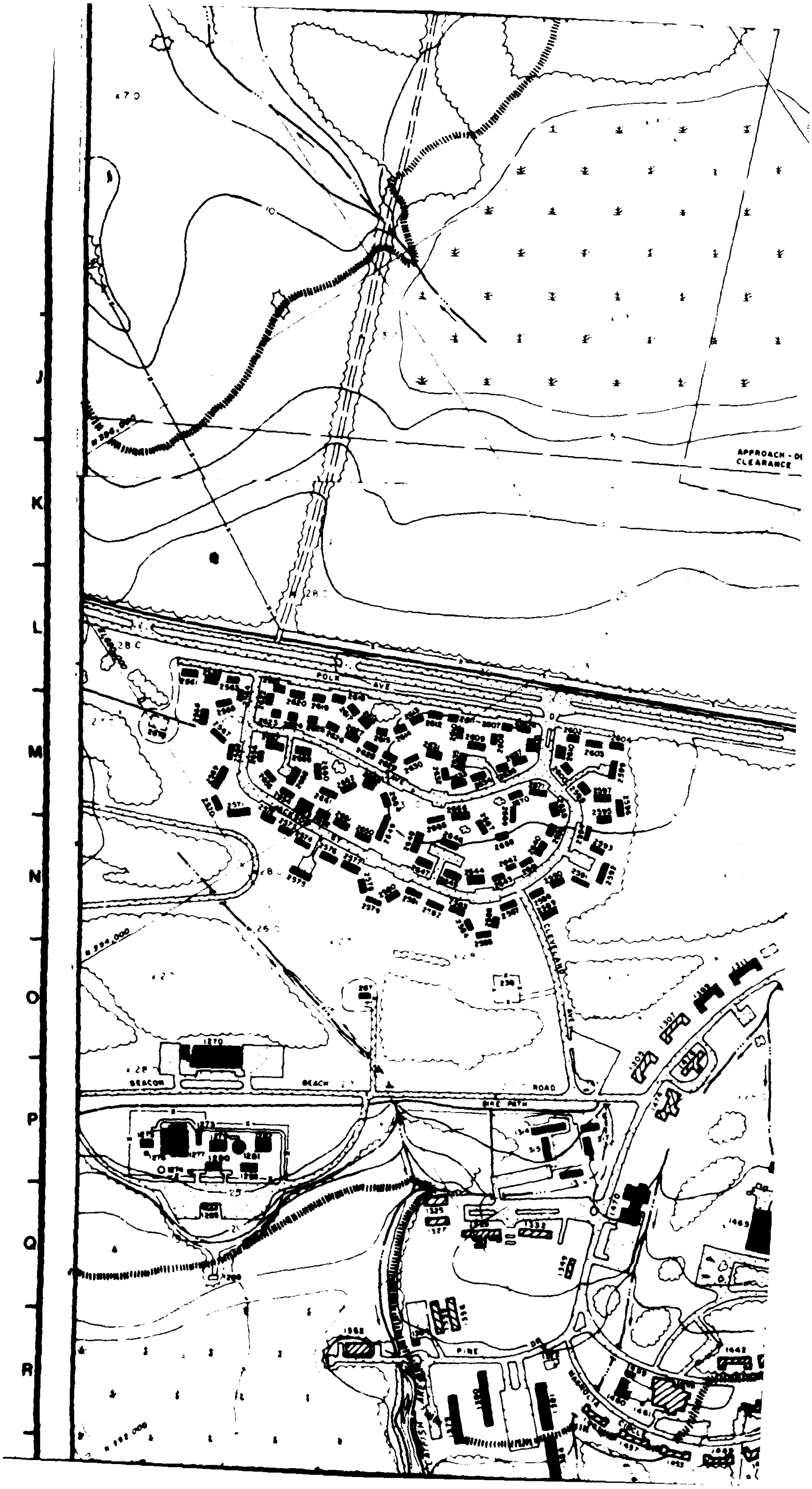

15
16
17
18
19
20
21
22
TAXIWAY "F"
T11-1
1250 SAFETY AREA
TRIM PAD 3
BAK-12
ARRESTING CABLE
TAXIWAY "D"
TAXIWAY "G"
NW-SE RUNWAY 150 x 8,075



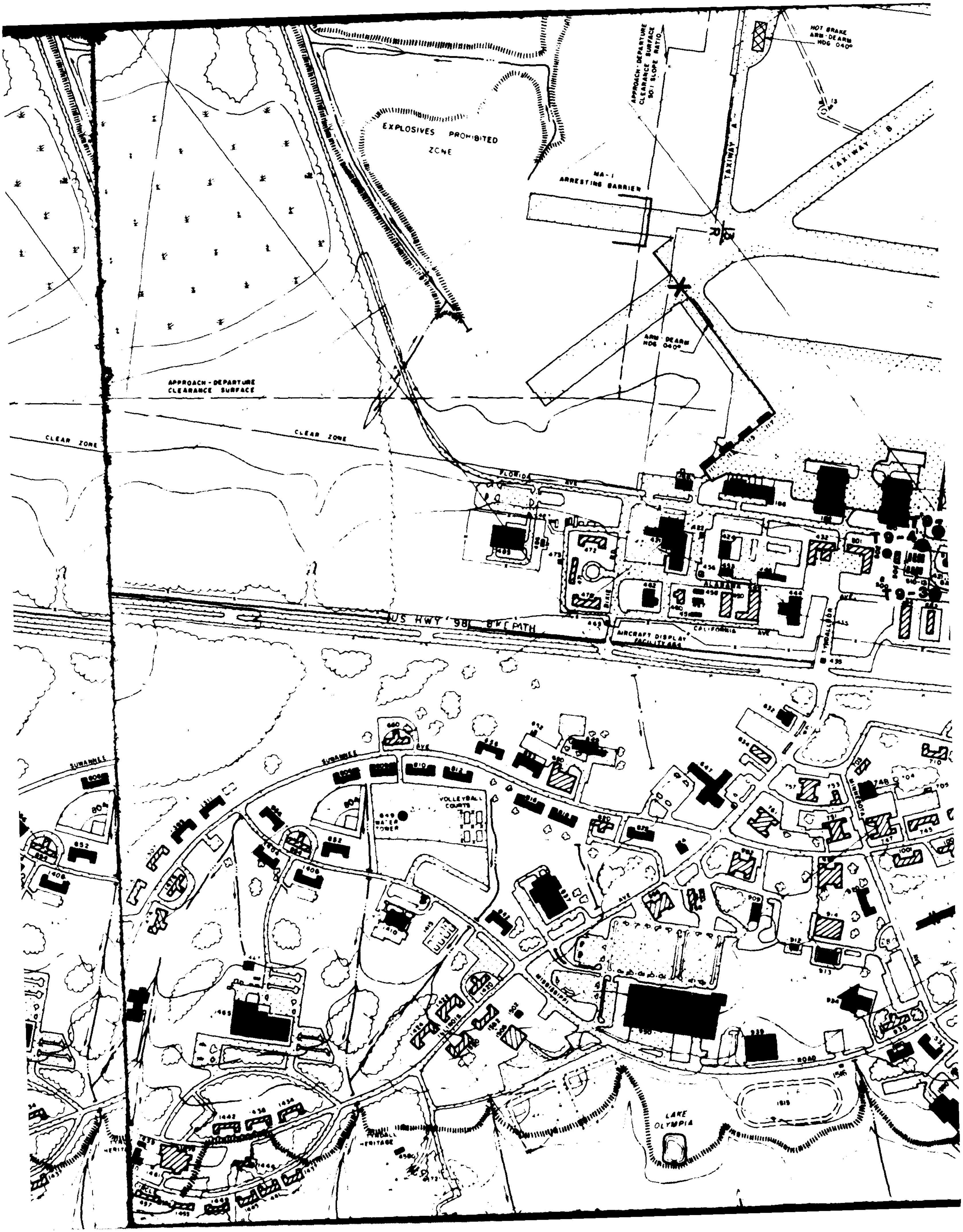
T11-1
T11-2
T11-3
TRIM PAD'S
HUNG ORDNANCE
TRIM PAD 3
TAXIWAY F
3150 AMMO AREA
APPROACH - DEPARTURE
CLEARANCE SURFACE
BAK-12
ARRESTING CABLE
TRUE BEARING
CLEAR ZONE
TAXIWAY

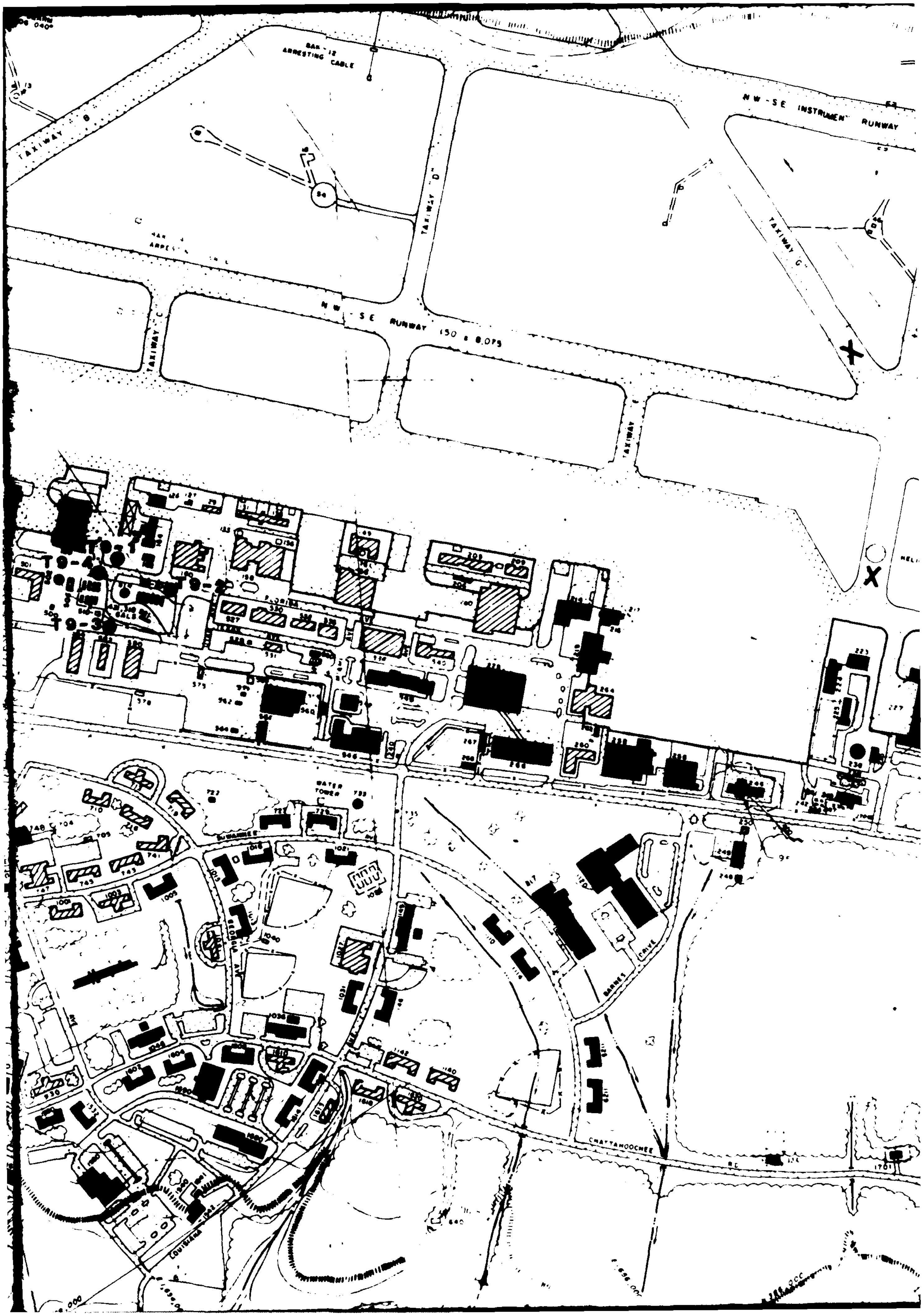


27
28
29
30
31
32
33
34
5
5
WATER WELL
GPM BLDG 7001
WATER WELL
70 GPM BLDG
SUSPECT POINT
●T7-2
●T7-3
T7-2
TAXIWAY



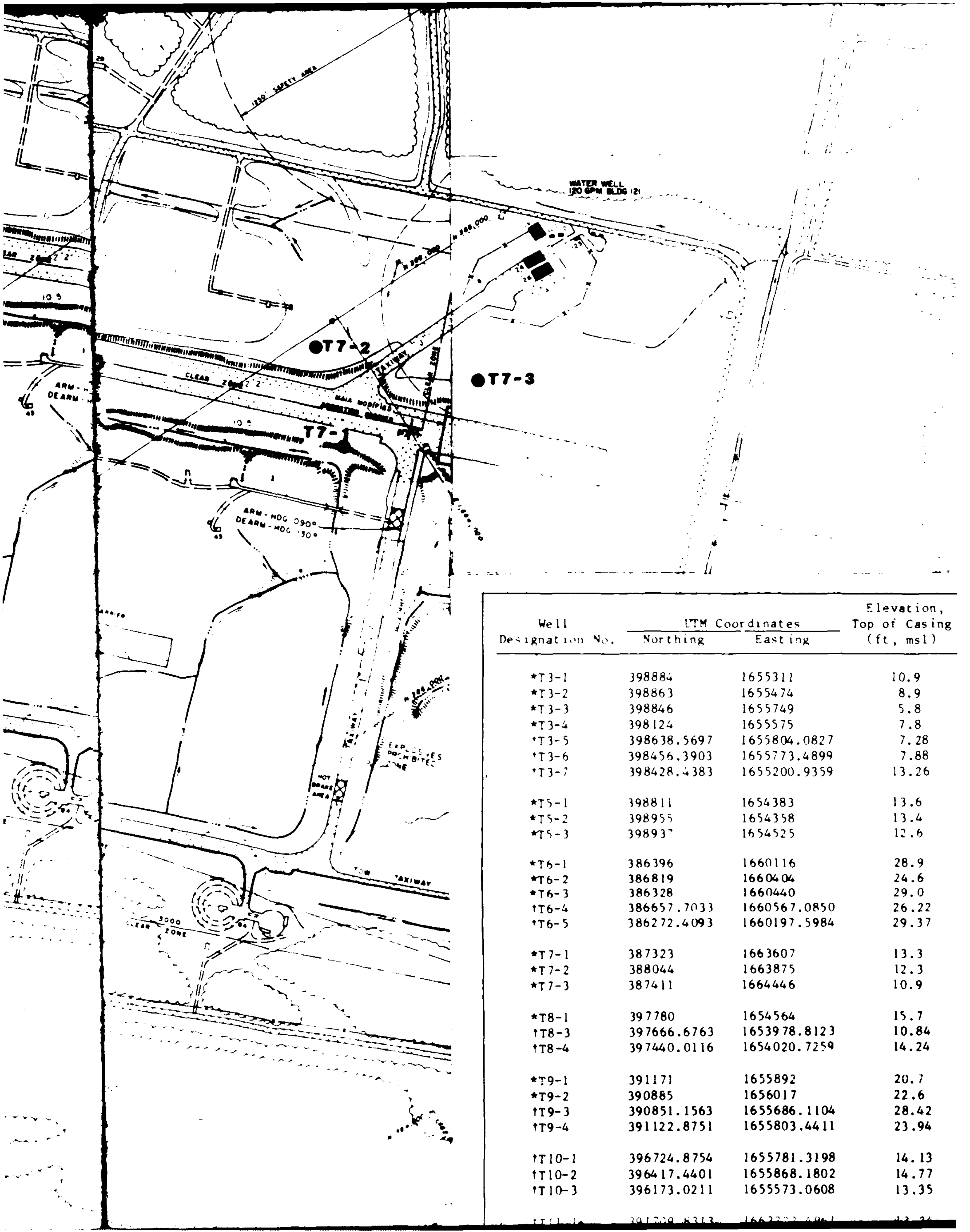
J
K
L
M
N
O
P
Q
R
APPROACH - D
CLEARANCE
POLK AVE
CLEVELAND AVE
BEACON BEACH ROAD
BIKE PATH
PINE DR
1270


HOT BRAKE ARM DEARM HDG 040°
APPROACH-DEPARTURE CLEARANCE SURFACE 50:1 SLOPE RATIO
TAXIWAY A
TAXIWAY B
EXPLOSIVES PROHIBITED ZONE
MA-1 ARRESTING BARRIER
ARM DEARM HDG 040°
APPROACH-DEPARTURE CLEARANCE SURFACE
CLEAR ZONE
CLEAR ZONE
FLORIDA AVE
ALABAMA AVE
US HWY 98
CALIFORNIA AVE
SUWANNEE AVE
VOLLEYBALL COURTS
WATER TOWER
MISSISSIPPI
ILLINOIS
ROAD
LAKE OLYMPIA

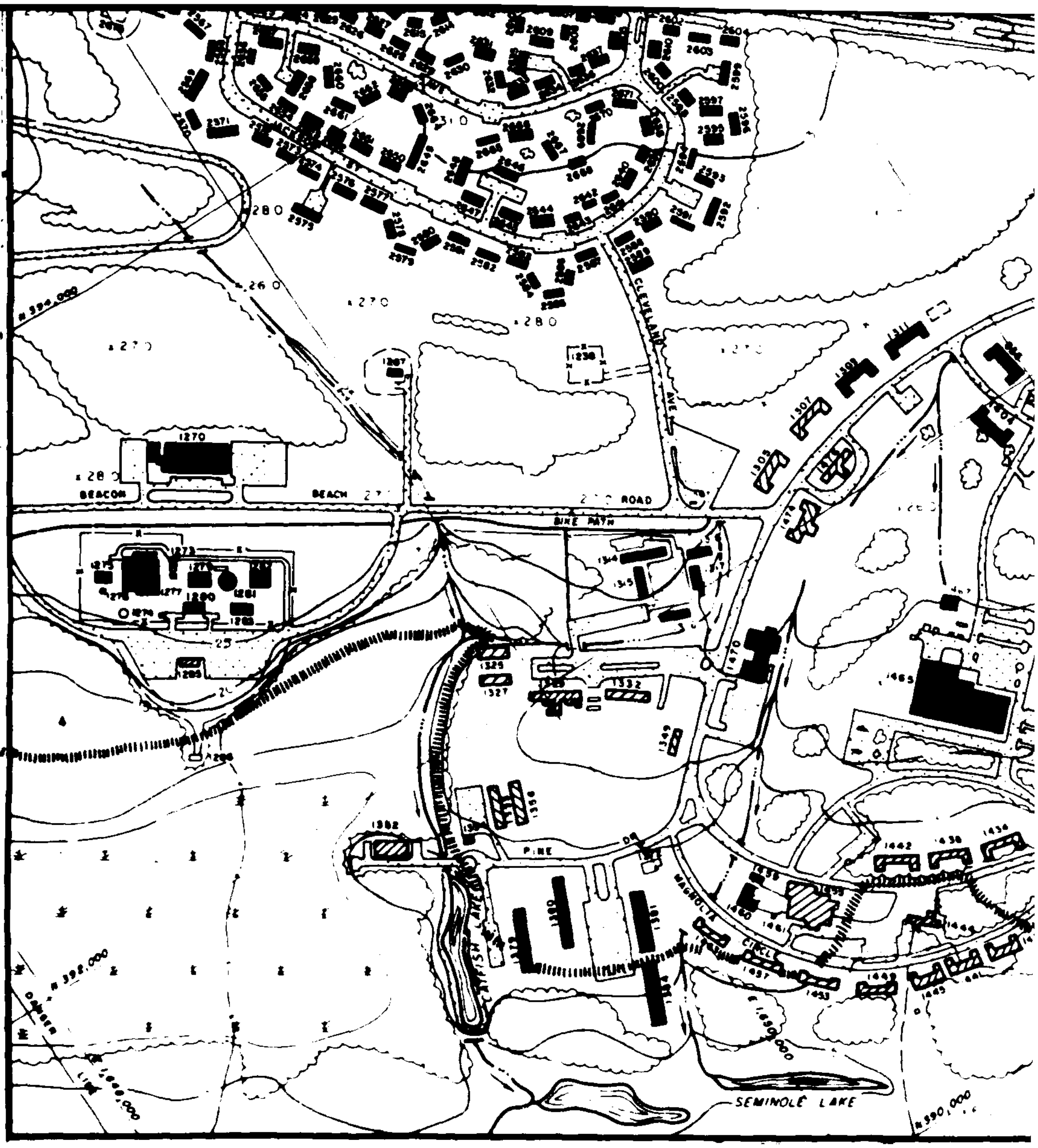


BAK-12
ARRESTING CABLE
TAXIWAY B
TAXIWAY "D"
NW-SE INSTRUMENT RUNWAY
TAXIWAY G
NW-SE RUNWAY 150 x 8,075
TAXIWAY C
TAXIWAY E
FLORIDA
WATER TOWER
SUWANNEE
BARNES DRIVE
CHATTANOOCHEE RD
LOUISIANA

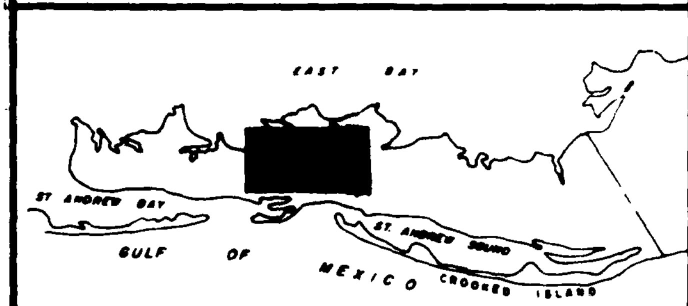
APPROACH - DEPARTURE CLEARANCE SURFACE
NW-SE INSTRUMENT RUNWAY 200' x 10,000' TRUE BEARING 134° 28' - 314° 28'
BAK-12 ARRESTING CABLE
TAXIWAY G
TAXIWAY
HELIPAD 1
HELIPAD 2
HOT BRAKE AREA
ARRESTING BARRIER
APPROACH - DEPARTURE CLEARANCE SURFACE 50:1 SLOPE RATIO
TAXIWAY H
TAXIWAY I
APPROACH DEPARTURE CLEARANCE SURFACE
WATER TOWER
303
223
227
T6-4
T6-2
T6-3
T6-1
T6-5
POND
POND
SEWAGE TREATMENT SPRAYFIELD
SEWAGE DISPOSAL PLANT FACILITY 1750



Well Designation No.	UTM Coordinates Northing	UTM Coordinates Easting	Elevation, Top of Casing (ft, msl)
*T3-1	398884	1655311	10.9
*T3-2	398863	1655474	8.9
*T3-3	398846	1655749	5.8
*T3-4	398124	1655575	7.8
†T3-5	398638.5697	1655804.0827	7.28
†T3-6	398456.3903	1655773.4899	7.88
†T3-7	398428.4383	1655200.9359	13.26
*T5-1	398811	1654383	13.6
*T5-2	398955	1654358	13.4
*T5-3	398937	1654525	12.6
*T6-1	386396	1660116	28.9
*T6-2	386819	1660404	24.6
*T6-3	386328	1660440	29.0
†T6-4	386657.7033	1660567.0850	26.22
†T6-5	386272.4093	1660197.5984	29.37
*T7-1	387323	1663607	13.3
*T7-2	388044	1663875	12.3
*T7-3	387411	1664446	10.9
*T8-1	397780	1654564	15.7
†T8-3	397666.6763	1653978.8123	10.84
†T8-4	397440.0116	1654020.7259	14.24
*T9-1	391171	1655892	20.7
*T9-2	390885	1656017	22.6
†T9-3	390851.1563	1655686.1104	28.42
†T9-4	391122.8751	1655803.4411	23.94
†T10-1	396724.8754	1655781.3198	14.13
†T10-2	396417.4401	1655868.1802	14.77
†T10-3	396173.0211	1655573.0608	13.35
†T11-1	391209.8313	[illegible]	[illegible]

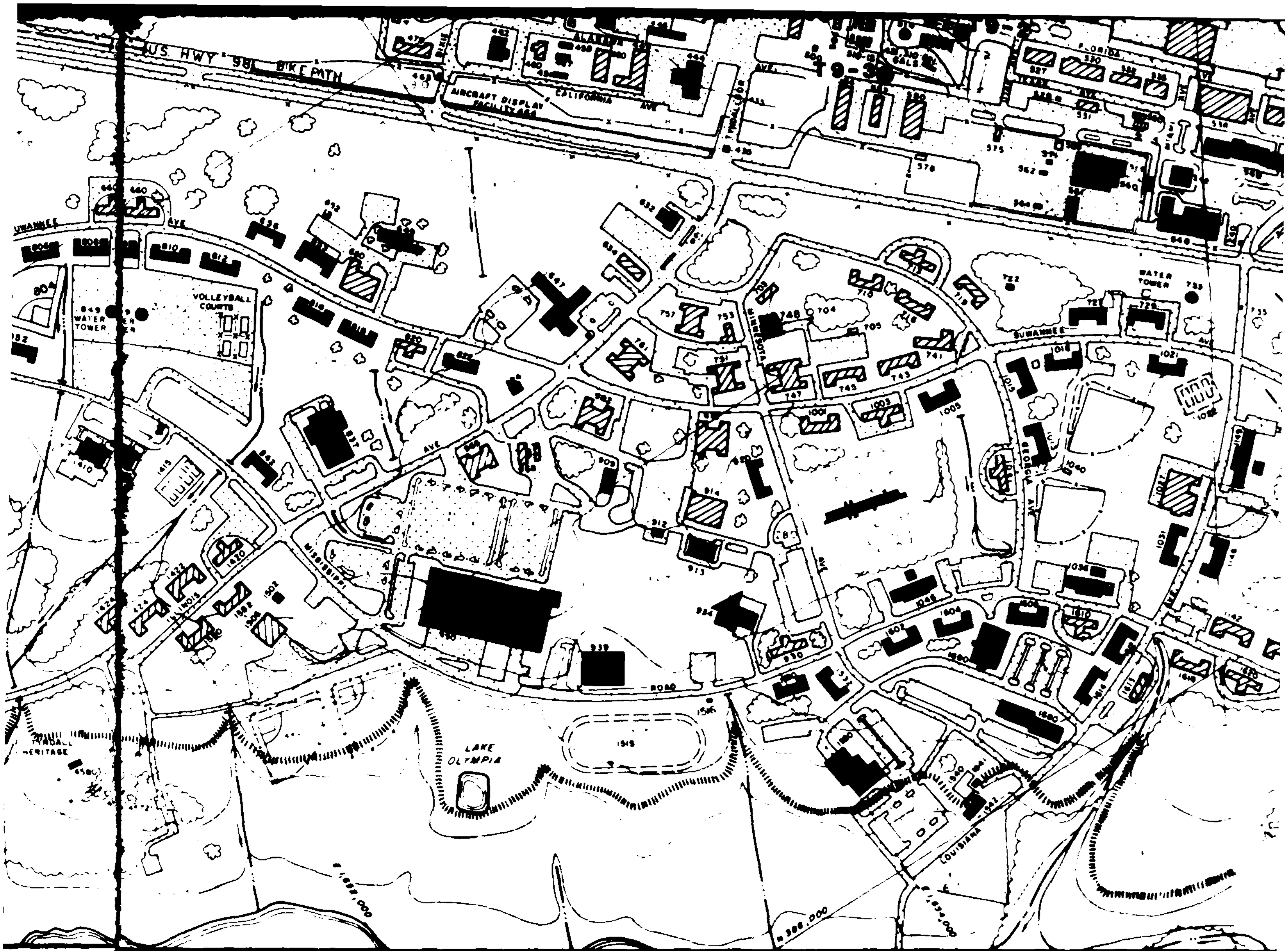


KEY MAP



STANDARD LEGEND

- PROPERTY LINE
- PROPERTY LINE EASEMENT (E) LEASE (L) PERMIT (P)
- FENCE
- APPROACH-DEPARTURE ZONE & R/W CLEARANCE
- BUILDING AND STRUCTURE, PERMANENT
- BUILDING, SEMI-PERMANENT



BUILDING, TEMPORARY

AIRFIELD PAVEMENT

ROADS AND PARKING

TRAIL

UNPAVED ROAD

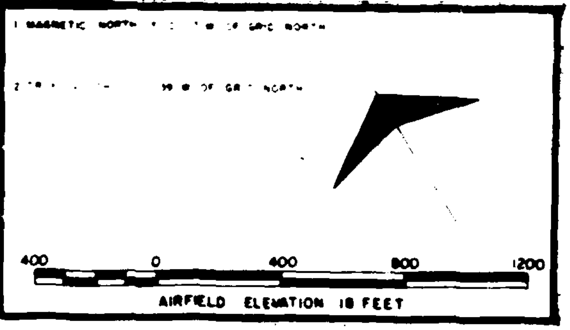
TREE COVER

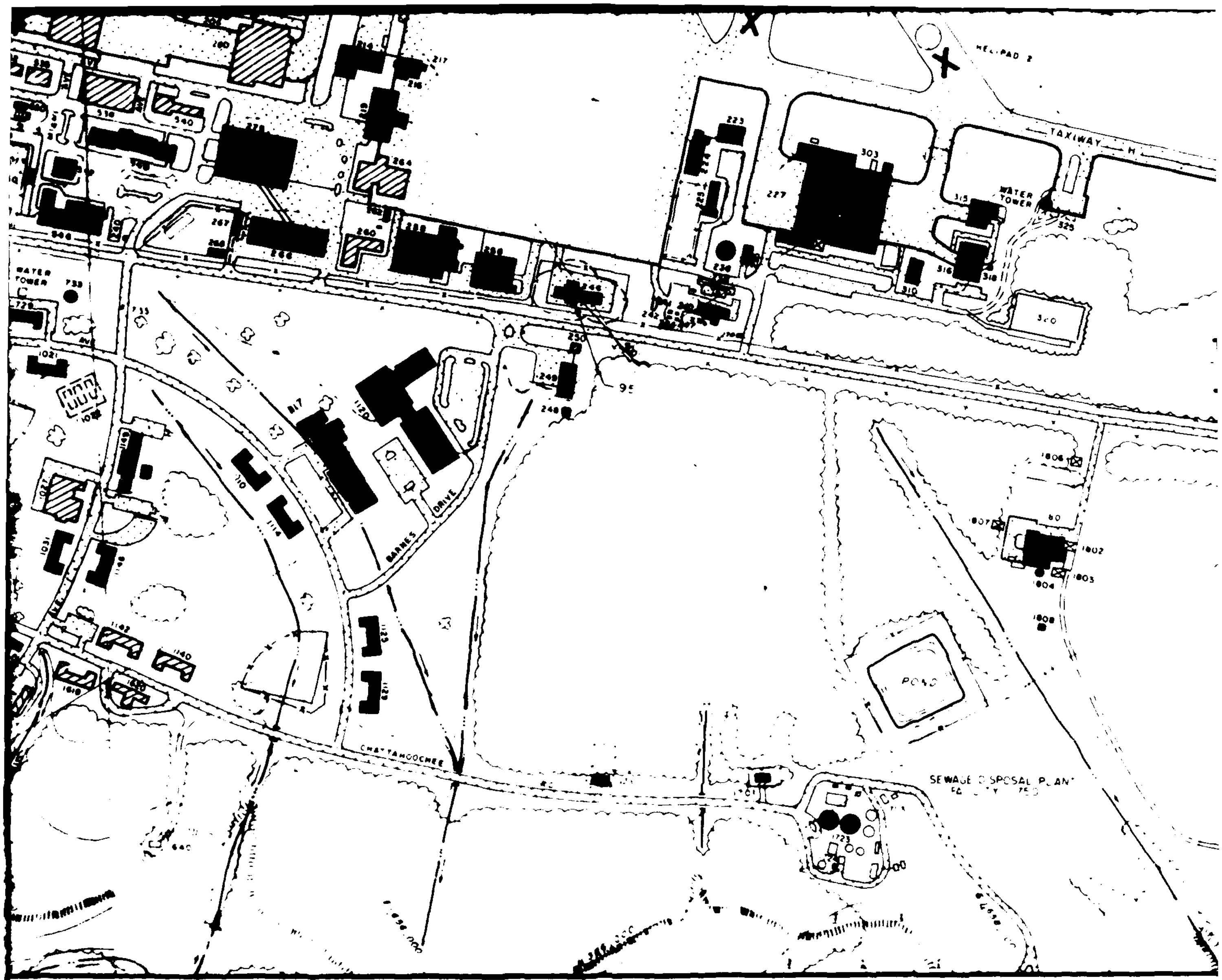
SHORELINE

STREAM IN GENERAL WITH DIRECTION OF FLOW

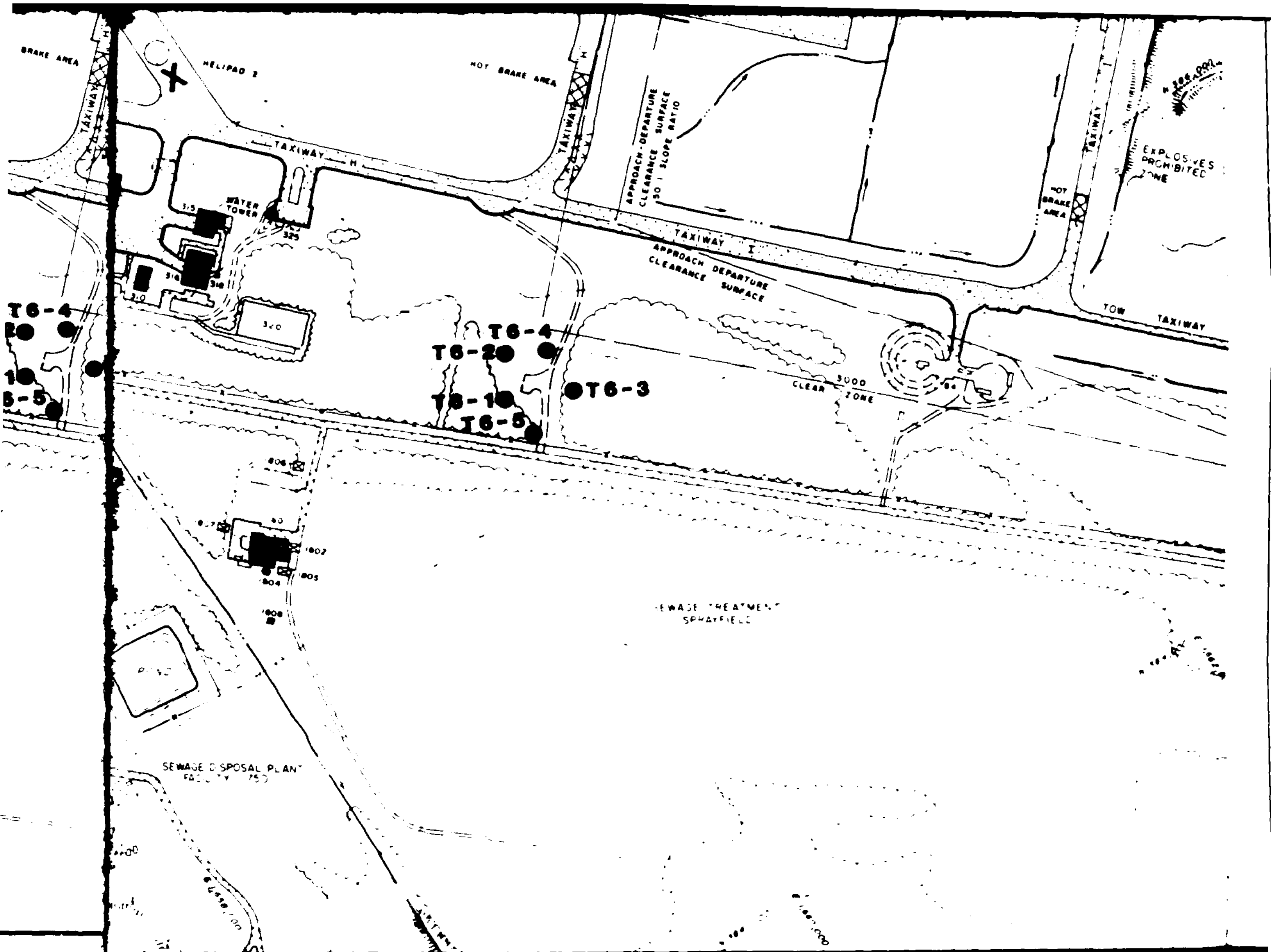
INTERMITTENT STREAMS OR DITCHES WITH DIRECTION OF FLOW

SWAMP





TAXIWAY H
WATER TOWER
WATER TOWER
303
227
223
315
316
318
310
325
BARNES DRIVE
CHATTAHOOCHEE
1120
817
1021
1031
1140
1806
1807
1802
1803
1804
1808
POND
SEWAGE DISPOSAL PLANT
1723



L - 2

DRAWING NO. DRAWI

ESE PROJECT NUMBER

4

3

2

1

DRAWN/REVISED B

*T3-1
*T3-2
*T3-3
*T3-4
†T3-5
†T3-6
†T3-7

*T5-1
*T5-2
*T5-3

*T6-1
*T6-2
*T6-3
†T6-4
†T6-5

*T7-1
*T7-2
*T7-3

*T8-1
†T8-3
†T8-4

*T9-1
*T9-2
†T9-3
†T9-4

†T10-1
†T10-2
†T10-3

†T11-1
†T11-2
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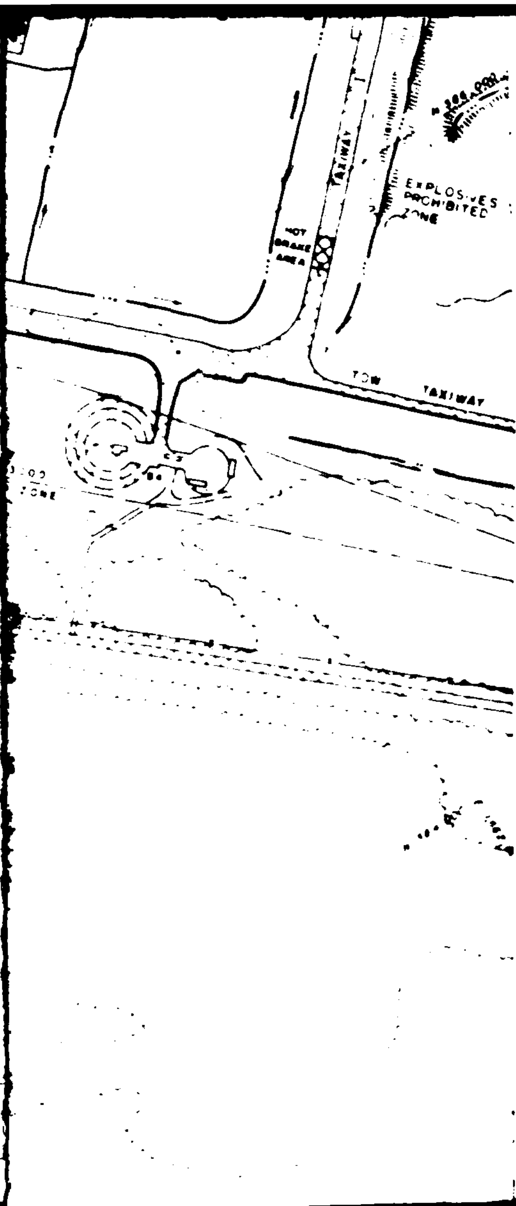

*T3-1	398884	1655311	10.9
*T3-2	398863	1655474	8.9
*T3-3	398846	1655749	5.8
*T3-4	398124	1655575	7.8
†T3-5	398638.5697	1655804.0827	7.28
†T3-6	398456.3903	1655773.4899	7.88
†T3-7	398428.4383	1655200.9359	13.26
*T5-1	398811	1654383	13.6
*T5-2	398955	1654358	13.4
*T5-3	398937	1654525	12.6
*T6-1	386396	1660116	28.9
*T6-2	386819	1660404	24.6
*T6-3	386328	1660440	29.0
†T6-4	386657.7033	1660567.0850	26.22
†T6-5	386272.4093	1660197.5984	29.37
*T7-1	387323	1663607	13.3
*T7-2	388044	1663875	12.3
*T7-3	387411	1664446	10.9
*T8-1	397780	1654564	15.7
†T8-3	397666.6763	1653978.8123	10.84
†T8-4	397440.0116	1654020.7259	14.24
*T9-1	391171	1655892	20.7
*T9-2	390885	1656017	22.6
†T9-3	390851.1563	1655686.1104	28.42
†T9-4	391122.8751	1655803.4411	23.94
†T10-1	396724.8754	1655781.3198	14.13
†T10-2	396417.4401	1655868.1802	14.77
†T10-3	396173.0211	1655573.0608	13.35
†T11-1	391709.8313	1662222.4961	13.24
†T11-2	391511.2668	1662569.1190	12.97
†T11-3	391396.9281	1662629.6801	8.43

*Installed during Phase II, Stage 1 survey.
†Installed during Phase II, Stage 2 survey.

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L - 2

TYNDALL AIR FORCE BASE
MONITOR WELL LOCATIONS

DRAWING NO DRAWING TITLE

ESE PROJECT NUMBER SCALE

4
3
2
1

DRAWN/REVISED BY CHK'D DATE

ESE ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
AN ... COMPANY

APPROVED FOR ISSUE BY DATE

APPENDIX M

GROUND WATER SAMPLING LOGS

WELL SAMPLING DATA FORM

Well Number: L42-1 Date: [illegible] Time: [illegible]

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 12.5 Stickup: 2.2

WATER LEVEL

Held: 7.00

Cut: 0.55

DTW: 6.45 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 15.5

DTW Top of Casing: 6.45

Column of Water in Well: 9.05

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	.39
Column of Water or Length of A.S. (whichever is less)	X	9.05
Volume of Annular Space	=	3.5
Gallons per foot of Casing	=	.163
Column of Water	X	9.05
Volume of Casing	=	[illegible]
Total Volume (Volume of A.S. + Volume of Casing)	=	[illegible]
Number of Volumes to be Evacuated	X	[illegible]
Total Volume to be Evacuated	=	[illegible]

Method of Purging (pump, bailer, etc.): [illegible]

FIELD ANALYSES

	Start	Mid	End
Time	10:32	10:43	[illegible]
pH	5.9	5.5	[illegible]
Conductivity	42	138	[illegible]
Temperature	27.9	25.2	[illegible]

Total Volume Purged: ~~[illegible]~~ 30 gallons

Sample Time: [illegible] Sample Number: [illegible]

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [illegible] Date: [illegible]

Signed/Reviewer: [illegible] Date: 6/22/86

WELL SAMPLING DATA FORM

Well Number: LH2-2 Date: 10/14/86 Time: 08:35

Boring Diameter: 6 Well Casing Diameter: 2"

Annular Space Length: 12.5 Stickup: 1.2

WATER LEVEL

Held: 5.0

Cut: 0.6

DTW: 4.4 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 15.5

DTW Top of Casing: 4.4

Column of Water in Well: 11.1

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	.39
Column of Water or Length of A.S. (whichever is less)	X	11.1
Volume of Annular Space	=	4.3
Gallons per foot of Casing	=	.1632
Column of Water	X	11.1
Volume of Casing	=	1.8
Total Volume (Volume of A.S. + Volume of Casing)	=	6.1
Number of Volumes to be Evacuated	X	3 → 5
Total Volume to be Evacuated	=	18.4 → 30.7

Method of Purging (pump, bailer, etc.): CENT. HYDRO

FIELD ANALYSES

	Start	Mid	End
Time	10:12	10:41	11:05
pH	5.6	5.5	5.6
Conductivity	64	62	58
Temperature	25.7	26.4	26.5

Total Volume Purged: 34 gallons

Sample Time: 11:25 Sample Number: [illegible] - 2 - 2

FRACTIONS

					H	M	N	NF
B	C	CF	CL	F				
							UP	Z
O	P	R	RP	RS	S	T		

NOTES

Signed/Sampler: [signature] Date: [illegible]

Signed/Reviewer: [signature] Date: 10/23/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: CH2-3 Date: 10/4/85 Time: 11:35

Boring Diameter: 3 Well Casing Diameter: 2"

Annular Space Length: 12.5 Stickup: 2.7

WATER LEVEL

Held: 5.0

Cut: 1.0

DTW: 4.0 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 16.0

DTW Top of Casing: 4.0

Column of Water in Well: 12.0

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	.39
Column of Water or Length of A.S. (whichever is less)	X	12.0
Volume of Annular Space	=	4.7
Gallons per foot of Casing	=	.163
Column of Water	X	12.0
Volume of Casing	=	2.0
Total Volume (Volume of A.S. + Volume of Casing)	=	6.6
Number of Volumes to be Evacuated	X	3→5
Total Volume to be Evacuated	=	19.9→33.7

Method of Purging (pump, bailer, etc.): CSU

FIELD ANALYSES

	Start	Mid	End
Time	11:56	12:58	14:15
pH	6.3	6.9	7.0
Conductivity	237	362	352
Temperature	28.7	29.5	29.6

Total Volume Purged: 20 gallons

Sample Time: 14:25 Sample Number: [illegible]

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [signature] Date:

Signed/Reviewer: [signature] Date: 10/23/86

Cx

WELL SAMPLING DATA FORM

Well Number: 67-2-4 Date: [illegible] Time: [illegible]

Boring Diameter: 3 Well Casing Diameter: 2

Annular Space Length: 12.5 Stickup: 2.7

WATER LEVEL

Held: 5.0

Cut: 1.1

DTW: 3.9 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 16.0

DTW Top of Casing: 3.9

Column of Water in Well: 12.1

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	.39
Column of Water or Length of A.S. (whichever is less)	x	12.1
Volume of Annular Space	=	4.7
Gallons per foot of Casing	=	.1632
Column of Water	x	12.1
Volume of Casing	=	2.0
Total Volume (Volume of A.S. + Volume of Casing)	=	6.7
Number of Volumes to be Evacuated	x	3→5
Total Volume to be Evacuated	=	20.1→33.5

Method of Purging (pump, bailer, etc.): CENT

FIELD ANALYSES

	Start	Mid	End
Time	12:04	12:48	14:02
pH	6.3	6.6	6.7
Conductivity	127	276	231
Temperature	26.8	28.0	2[illegible]

Total Volume Purged: 26 gallons

Sample Time: 14:10 Sample Number: TN[illegible]

FRACTIONS

B C CP CL F H M N NF
O P R RP RS S T UP Z

NOTES

Signed/Sampler: [signature] Date: [illegible]

Signed/Reviewer: [signature] Date: 10/23/86

WELL SAMPLING DATA FORM

Well Number: LH2-7 Date: 10-17-86 Time: 1400
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 11.2' Stickup: 1.4'

Not sampled 10/17

WATER LEVEL

Held: 7.00
Cut: 1.64
DTW: 5.36 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 13.40
DTW Top of Casing: 5.36
Column of Water in Well: 8.04

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	x	8.04
Volume of Annular Space	=	3.16
Gallons per foot of Casing	=	0.1632
Column of Water	x	8.04
Volume of Casing	=	1.31
Total Volume (Volume of A.S. + Volume of Casing)	=	4.47
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	13.4 - 22.3

Method of Purging (pump, bailer, etc.): Pump - not continuous

Hydrolab #2

FIELD ANALYSES

	Start	Mid	End	10/22 Start	10/22 End
Time	1408 @ 5 gal	1415 @ 10 gal	1424 @ 25 gal	1252 @ 4 gal	1310 @ 10 gal
pH	5.5	5.6	5.7	5.6	5.5
Conductivity	251	238	237	242	235
Temperature	27.7	27.9	28.8	26.3	26.2

Total Volume Purged: 25+10 gallons
Sample Time: 1315 (10/22) Sample Number: 2*5

Total purg 10/22 = 4 gal

FRACTIONS

B C CF CL F H M N NF
O P R RP RS S T UP Z

NOTES V x 3

• Well partially re-purged due to delay between orig. purge date & sample date -

Signed/Sampler: [signature] Date:
Signed/Reviewer: Date: 10/22/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: LH2-8 Date: 10/22/86 Time: 1115

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 16.2' Stickup: 2.2'

WATER LEVEL

Held: -7.00'

Cut: 0.85'

DTW: -6.15' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21.2'

DTW Top of Casing: -6.15'

Column of Water in Well: 15.05'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	15.05
Volume of Annular Space	=	23.6
Gallons per foot of Casing	=	0.6528
Column of Water	x	15.05
Volume of Casing	=	9.8
Total Volume (Volume of A.S. + Volume of Casing)	=	33.4
Number of Volumes to be Evacuated	x	3-5
Total Volume to be Evacuated	=	100.2-167

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	1130 @ 5 gal	1153 @ 75 gal	1215 @ 150 gal
pH	6.2	6.0	6.0
Conductivity	281	310	330
Temperature	27.9	27.8	27.9

Total Volume Purged: 150 gallons

Sample Time: 1230 Sample Number: 2 #7

FRACTIONS

B C CF CL F H M N NF

O P R RP RS S T UP Z

NOTES

VX3

Water quite clean after purging

Signed/Sampler: [signature] Date: 10/22/86

Signed/Reviewer: [signature] Date: 10/28/86

WELL SAMPLING DATA FORM

Well Number: LH2-9 Date: 10/22/86 Time: 0815
Boring Diameter: ≈12" Well Casing Diameter: 4" I.D.
Annular Space Length: 16.6' Stickup: 3.2'

WATER LEVEL

Held: - 7.00'
Cut: 0.80
DTW: - 6.20' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.2'
DTW Top of Casing: - 6.20'
Column of Water in Well: 16.0

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	16.0
Volume of Annular Space	=	25.1
Gallons per foot of Casing	=	0.6528
Column of Water	x	16.0
Volume of Casing	=	10.4
Total Volume (Volume of A.S. + Volume of Casing)	=	35.5
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	106.5 - 177.5

Method of Purging (pump, bailer, etc.): Pumping (discontinuous)

FIELD ANALYSES

	Start	Mid	End
Time	0840 @ 5 gal	0937 @ 90 GAL	1033 @ 175 GAL
pH	5.7	5.7	5.7
Conductivity	265	285	293
Temperature	23.2	25.2	25.8

Total Volume Purged: 175 gallons
Sample Time: 11:10 Sample Number: 2*8 / 2*6

FRACTIONS

B C CF CL F H M N NF VX3
O P R RP RS S T UP Z

NOTES QA N and O fractions sampled here

Signed/Sampler: [signature] Date: 10/22/86
Signed/Reviewer: [signature] Date: 10/28/86

Sent to Brooks

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T3-1 Date: 10/15/85 Time: 0920

Boring Diameter: 5" Well Casing Diameter: 2"

Annular Space Length: 9.3 Stickup: 2.7

WATER LEVEL

Held: 8.0

Cut: .6

DTW: 7.4 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 14.0

DTW Top of Casing: 7.4

Column of Water in Well: 6.6

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	.39
Column of Water or Length of A.S. (whichever is less)	X	6.6
Volume of Annular Space	=	2.6
Gallons per foot of Casing	=	.1632
Column of Water	X	6.6
Volume of Casing	=	1.1
Total Volume (Volume of A.S. + Volume of Casing)	=	3.7
Number of Volumes to be Evacuated	X	3 → 5
Total Volume to be Evacuated	=	11.0 → 18.3

Method of Purging (pump, bailer, etc.): CSNT

FIELD ANALYSES	Start	Mid	End
Time	0957	10:06	10:17
pH	6.3	6.0	6.0
Conductivity	184	147	144
Temperature	24.8	26.4	26.7

Total Volume Purged: 30 gallons

Sample Time: 10:50 Sample Number: TYUDC 6+1

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: RM Date: 10/15/85

Signed/Reviewer: R. J. [illegible] Date: 10/22/85

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T3-2 Date: 12/1/85 Time: 0937

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 7.3 Stickup: 2.7

WATER LEVEL

Held: 7.0

Cut: .9

DTW: 6.1 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 14.0

DTW Top of Casing: 6.1

Column of Water in Well: 7.9

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	.39
Column of Water or Length of A.S. (whichever is less)	X	7.9
Volume of Annular Space	=	3.1
Gallons per foot of Casing	=	.1632
Column of Water	X	7.9
Volume of Casing	=	1.3
Total Volume (Volume of A.S. + Volume of Casing)	=	4.4
Number of Volumes to be Evacuated	X	3 → 5
Total Volume to be Evacuated	=	13.1 → 21.9

Method of Purging (pump, bailer, etc.): CENT.

FIELD ANALYSES

	Start	Mid	End
Time	10:05	10:31	10:50
pH	6.0	6.0	6.0
Conductivity	178	168	167
Temperature	26.6	26.2	26.1

Total Volume Purged: 50 gallons

Sample Time: 11:10 Sample Number: TVDL 3*2

FRACTIONS

B	C	CP	CL	F	H	M	N	NP
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [signature] Date: 12/15/85

Signed/Reviewer: [signature] Date: 12/27/86

WELL SAMPLING DATA FORM

Well Number: T3-3 Date: 10/15/86 Time: 11:29

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 8.3 Stickup: ~~3.8~~ 3.7

WATER LEVEL

Held: 5.0

Cut: 1.1

DTW: 3.9 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 13.0

DTW Top of Casing: 3.9

Column of Water in Well: 9.1

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	.39
Column of Water or Length of A.S. (whichever is less)	X	8.3
Volume of Annular Space	=	3.2
Gallons per foot of Casing	=	.1632
Column of Water	X	9.1
Volume of Casing	=	1.5
Total Volume (Volume of A.S. + Volume of Casing)	=	4.7
Number of Volumes to be Evacuated	X	3→5
Total Volume to be Evacuated	=	14.2→23.0

Method of Purging (pump, bailer, etc.):

FIELD ANALYSES

	Start	Mid	End
Time	11:39	11:41	11:44
pH	6.1	6.2	6.2
Conductivity	195	178	183
Temperature	25.0	25.2	25.2

Total Volume Purged: 50+ gallons

Sample Time: 11:55 Sample Number: TNDYL 6*3

FRACTIONS

B	C	CP	CL	F	H	M	N RR 10/16	NP
O	P	R	RP	RS	S	T	UP	Z

NOTES

OIL + GR 10-15-6 TO BRANDS

VX3 + EDX RR 10/16 one bailer full of sample had red color sediment in top, bottom of bailed sample while center of sample was clear

Signed/Sampler: RH Date: 10/15/86

Signed/Reviewer: R. [illegible] Date: 10/23/86

WELL SAMPLING DATA FORM

Well Number: T3-4 Date: [illegible] Time: 12:33

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 8.3 Stickup: 2.7

WATER LEVEL

Held: 6.0

Cut: .9

DTW: 5.1 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 13.0

DTW Top of Casing: 5.1

Column of Water in Well: 7.9

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	.39
Column of Water or Length of A.S. (whichever is less)	X	7.9
Volume of Annular Space	=	3.1
Gallons per foot of Casing	=	.163
Column of Water	X	7.9
Volume of Casing	=	1.3
Total Volume (Volume of A.S. + Volume of Casing)	=	4.4
Number of Volumes to be Evacuated	X	3 → 5
Total Volume to be Evacuated	=	13.1 → 21.9

[illegible]

+4

Method of Purging (pump, bailer, etc.):

Hydrolab #1

FIELD ANALYSES	Start	Mid	End
Time	12:45	15:10	1625
pH	6.8	6.8	6.6
Conductivity	393	318	328
Temperature	30.7	25.7	25.8

Total Volume Purged: 140 gallons

10/16/86

Sample Time: 1645 Sample Number: T4DYL6#4

FRACTIONS

B C CF CL F H M N NF

O P R RP RS S T UP Z

NOTES VX3 + ED

breaks

Signed/Sampler: [signature] Date: 10/16/86

Signed/Reviewer: [signature] Date: 10/22/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T3-5 Date: 10/17/86 Time: 1115

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 16.5' Stickup: ~~2.0'~~ 2.1'

WATER LEVEL

Held: 7.00

Cut: 0.90

DTW: 6.10 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.5'

DTW Top of Casing: 6.1

Column of Water in Well: 14.4

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	14.4
Volume of Annular Space	=	22.61
Gallons per foot of Casing	=	.6528
Column of Water	X	14.4
Volume of Casing	=	9.4
Total Volume (Volume of A.S. + Volume of Casing)	=	32.0
Number of Volumes to be Evacuated	X	3 - 5
Total Volume to be Evacuated	=	96 - 160

Method of Purging (pump, bailer, etc.): Continuous pumping

Hydrolab #1

FIELD ANALYSES	Start	Mid	End
Time	1120 @ 5 gal.	1132 @ 80 gal	1144 @ 160 gal
pH	6.5	6.2	6.1
Conductivity	334	309	308
Temperature	26.0	26.5	26.6

Total Volume Purged: 170 gallons 6*8 → QA

Sample Time: 1145 Sample Number: 6*5

FRACTIONS

B C CF CL F H M N NF

O P R RP RS S T UP Z

NOTES: V x 3 + EB QA TAKEN HERE - complete set

Signed/Sampler: [signature] Date: 10/17/86

Signed/Reviewer: [signature] Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T3-6 Date: 10/17/86 Time: 1210

Boring Diameter: 12" Well Casing Diameter: 4' I.D.

Annular Space Length: 16.5' Stickup: ~~2.0~~' 1.9'

WATER LEVEL

Held: 7.00

Cut: 0.45

DTW: 6.55 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.90

DTW Top of Casing: 6.55

Column of Water in Well: 14.35

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	14.35
Volume of Annular Space	=	22.53
Gallons per foot of Casing	=	.6528
Column of Water	X	14.35
Volume of Casing	=	9.37
Total Volume (Volume of A.S. + Volume of Casing)	=	31.9
Number of Volumes to be Evacuated	X	3 - 5
Total Volume to be Evacuated	=	95.7 - 159.5

Method of Purging (pump, bailer, etc.): Continuous pumping

Hydrolab #1

FIELD ANALYSES

	Start	Mid	End
Time	1214 @ 5 gal	1218 @ 80 gal	1222 @ 160 gal
pH	6.4	6.4	6.4
Conductivity	276	325	330
Temperature	27.2	27.1	27.0

Total Volume Purged: 165 gal gallons

Sample Time: 1230 Sample Number: 6 # 6

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES: VX3 + ED

Signed/Sampler: [signature] Date: 10/17/86

Signed/Reviewer: [signature] Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T3-7 Date: 10/23/86 Time: 1045
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 16.2' Stickup: 3.6'

WATER LEVEL

Held: -9.00'
Cut: 1.25'
DTW: -7.75' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.1'
DTW Top of Casing: 7.75
Column of Water in Well: 15.35'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	15.35
Volume of Annular Space	=	24.1
Gallons per foot of Casing	=	0.6528
Column of Water	x	15.35
Volume of Casing	=	10.0
Total Volume (Volume of A.S. + Volume of Casing)	=	34.1
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	102.3 - 170.5

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	1055 @ 5 gal	1140 @ 55 gal	1215 @ 100 gal
pH	5.4	5.3	5.4
Conductivity	077	072	074
Temperature	24.9	26.5	26.4

Total Volume Purged: 100 gallons
Sample Time: 1220 Sample Number: 6*7

FRACTIONS

B C CF CL F H M N NF
O P R RP RS S T UP Z

NOTES VOA x3 + ED

Signed/Sampler: [signature] Date: 10/23/86
Signed/Reviewer: [signature] Date: 10/28/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: TS-1 Date: 10/13/86 Time: 09:05

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 10.8' Stickup: 2.7

WATER LEVEL

Held: 10.0'

Cut: 1.2'

DTW: 8.8' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18'

DTW Top of Casing: 8.8

Column of Water in Well: 9.2

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	9.2
Volume of Annular Space	=	3.6
Gallons per foot of Casing	=	.1632
Column of Water	X	9.2
Volume of Casing	=	1.5
Total Volume (Volume of A.S. + Volume of Casing)	=	5.1
Number of Volumes to be Evacuated	X	3 → 5
Total Volume to be Evacuated	=	15.3 → 25.4

5 gal
~~1111~~
50 gal

Method of Purging (pump, bailer, etc.): [illegible]

FIELD ANALYSES

	Start	Mid	End	
Time	09:30	09:52	09:58	10:05
pH	6.6	6.2	6.3	6.2
Conductivity	91	95	95	93
Temperature	26.2	27.0	26.7	26.2

Total Volume Purged: 50 gallons

Sample Time: 11:10 Sample Number: TNDC 3*1 –

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

GTSW to Brooks

Signed/Sampler: [signature] Date: [illegible]

Signed/Reviewer: [signature] Date: 10/21/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: TS-2 Date: 10/13/85 Time: 09:43

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 10.8 Stickup: 2.7'

WATER LEVEL

Held: 10.0

Cut: 1.05

DTW: 8.95 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18.0'

DTW Top of Casing: 8.95

Column of Water in Well: 9.05

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	x	9.05
Volume of Annular Space	=	3.5
Gallons per foot of Casing	=	.1632
Column of Water	x	9.05
Volume of Casing	=	1.5
Total Volume (Volume of A.S. + Volume of Casing)	=	5.0'
Number of Volumes to be Evacuated	x	3-5
Total Volume to be Evacuated	=	15-25

Method of Purging (pump, bailer, etc.): centrifugal

FIELD ANALYSES

	Start	Mid	End
Time	10:22	10:27	10:40
pH	6.2	6.0	6.0
Conductivity	107	105	105
Temperature	27.9	26.3	27.0

Total Volume Purged: 60 gallons

Sample Time: 11:35 Sample Number: TYNDL3*2-

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [signature] Date: 10/13/85

Signed/Reviewer: [signature] Date: 10/22/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: TS-3 Date: 10/13/86 Time: 10:20

Boring Diameter: 6 Well Casing Diameter: 2

Annular Space Length: 10.8' Stickup: 2.7'

WATER LEVEL

Held: 9.0'

Cut: 1.0'

DTW: 8.0' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18'

DTW Top of Casing: 8.0'

Column of Water in Well: 10.0'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	10.0'
Volume of Annular Space	=	3.9
Gallons per foot of Casing	=	.1632
Column of Water	X	10.0'
Volume of Casing	=	1.6
Total Volume (Volume of A.S. + Volume of Casing)	=	5.5
Number of Volumes to be Evacuated	X	3→5
Total Volume to be Evacuated	=	16.6→27.7

Method of Purging (pump, bailer, etc.): ISU

FIELD ANALYSES

	Start	Mid	End
Time	10:46	10:51	10:57
pH	6.3	6.4	6.4
Conductivity	568	572	581
Temperature	26.9	26.6	26.6

Total Volume Purged: 100 gallons

Sample Time: 12:00 Sample Number: ~~TYNDL 3*3-~~ TYNDL 3*4- #QA

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

W-RUN TO BROOKS + QA

Signed/Sampler: [signature] Date: 10/13/86

Signed/Reviewer: [signature] Date: 10/23/86

WELL SAMPLING DATA FORM

Well Number: T6-1 Date: 10-16-86 Time: 1315
Boring Diameter: 6" Well Casing Diameter: 2" I.D.
Annular Space Length: 16.1' Stickup: +2.7'

WATER LEVEL

Held: 9.00
Cut: 1.02
DTW: 7.98 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21.80'
DTW Top of Casing: 7.98
Column of Water in Well: 13.82

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	x	13.82
Volume of Annular Space	=	5.39
Gallons per foot of Casing	=	0.1632
Column of Water	x	13.82
Volume of Casing	=	2.26
Total Volume (Volume of A.S. + Volume of Casing)	=	7.65
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	23.0 - 38.25

Method of Purging (pump, bailer, etc.): Pumped continuously

Hydrolab #1

FIELD ANALYSES	Start	Mid	End
Time	1322	1326 @ 20 gal	1332 @ 41 gal.
pH	6.0	5.9	6.0
Conductivity	110	94	92
Temperature	23.1	23.5	23.7

Total Volume Purged: 41 gal. gallons
Sample Time: 1400 Sample Number: 4 * 1

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES V x 3 W

Signed/Sampler: [signature] Date: 10/16/86
Signed/Reviewer: [signature] Date: 10/23/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T6-2   Date: 10/16/86   Time: 1510

Boring Diameter: 6"   Well Casing Diameter: 2" I.D.

Annular Space Length: 16.0'   Stickup: +2.5'

WATER LEVEL

Held: 4.7'

Cut: 0.1'

DTW: 4.6'   Top of Casing

T6-3 measurements erroneously recorded here (scratched out set)

COLUMN OF WATER IN WELL

Casing Length: 23'

DTW Top of Casing: 4.6'

Column of Water in Well: 18.4'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	16.0
Volume of Annular Space	=	6.24
Gallons per foot of Casing	=	0.1632
Column of Water	X	18.4
Volume of Casing	=	3.0
Total Volume (Volume of A.S. + Volume of Casing)	=	9.24
Number of Volumes to be Evacuated	X	3 - 5
Total Volume to be Evacuated	=	27.7 - 46.2

Method of Purging (pump, bailer, etc.): Continuous pumping

Hydrolab #1

FIELD ANALYSES

	10 gal Start	Mid	End
Time	1513 @ 16 gal	1521 @ 40 gal	1530 @ 80 gal
pH	5.0	4.8	4.8
Conductivity	67	62	61
Temperature	23.4	23.7	23.8

Total Volume Purged: 80 gal. gallons

Sample Time: 1540   Sample Number: 4 * 2

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES V x 3   W

Brooks

Signed/Sampler: [signature]   Date: 10/16/86

Signed/Reviewer: [signature]   Date: 10/23/86

WELL SAMPLING DATA FORM

Well Number: T6-3 Date: 10/16/86 Time: 1415

Boring Diameter: 6" Well Casing Diameter: 2" I.D.

Annular Space Length: 15.8' Stickup: 2.7'

WATER LEVEL

Held: 10.0'

Cut: 1.9'

DTW: 8.1' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23'

DTW Top of Casing: 8.1'

Column of Water in Well: 14.9'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	x	14.9
Volume of Annular Space	=	5.81
Gallons per foot of Casing	=	0.1632
Column of Water	x	14.9
Volume of Casing	=	2.43
Total Volume (Volume of A.S. + Volume of Casing)	=	8.24
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	24.7 - 41.2

Method of Purging (pump, bailer, etc.): Continuous pumping

Hydrolab #1

FIELD ANALYSES	Start	Mid	End
Time	1435	1441 @ 21 gal	1445 @ 75 gal
pH	6.0	5.9	5.9
Conductivity	302	311	302
Temperature	26.2	23.7	23.5

Total Volume Purged: 75 gal. gallons

Sample Time: 1505 Sample Number: 4 #3

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
G	P	R	RP	RS	S	T	UP	Z

NOTES: 4x3 W

Signed/Sampler: [signature] Date: 10/16/86

Signed/Reviewer: [signature] Date: 10/22/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T6-4 Date: 10/21/86 Time: 0810

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17' Stickup: 2.2'

WATER LEVEL

Held: -7.00'

Cut: -1.00'

DTW: -6.00' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21.2

DTW Top of Casing: -6.00'

Column of Water in Well: 15.2'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	15.2
Volume of Annular Space	=	23.9
Gallons per foot of Casing	=	.6528
Column of Water	x	15.2
Volume of Casing	=	9.9
Total Volume (Volume of A.S. + Volume of Casing)	=	33.8
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	101.4 - 169

Method of Purging (pump, bailer, etc.): Continuous pumping

Hydrolab #1

FIELD ANALYSES	Start	Mid	End
Time	0838 @ 10 gal	0919 @ 85 GAL	0950 @ 150 gal
pH	6.1	5.9	6.2
Conductivity	268	~~[illegible]~~ 355	379
Temperature	23.9	25.4	26.9

Total Volume Purged: 150 gallons

Sample Time: 1000 Sample Number: 4*4 / 4*6

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

To Brooks

NOTES QA Samples taken here [O and N fractions only - no V(x3) or W fraction sample containers sent]

V x 3 W

Signed/Sampler: [signature] Date: 10/21/86

Signed/Reviewer: [signature] Date: 10/25/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T6-5 Date: 10/21/86 Time: 1020

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 16.1' Stickup: +3.2'

WATER LEVEL

Held: - 10.00

Cut: 1.30'

DTW: - 8.70' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.7

DTW Top of Casing: 8.70'

Column of Water in Well: 14.0'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	14.0
Volume of Annular Space	=	22.0
Gallons per foot of Casing	=	.6528
Column of Water	X	14.0
Volume of Casing	=	9.1
Total Volume (Volume of A.S. + Volume of Casing)	=	31.1
Number of Volumes to be Evacuated	X	3 - 5
Total Volume to be Evacuated	=	93.3 - 155.5

Method of Purging (pump, bailer, etc.): Continuous pumping

Hydrolab #1

FIELD ANALYSES	Start	Mid	End
Time	1029 @ 5 gal	1034 @ 80 gal	1040 @ 160 gal
pH	6.0	5.8	5.6
Conductivity	146	141	142
Temperature	23.6	23.8	24.1

Total Volume Purged: 160 gal gallons

Sample Time: 1045 Sample Number: 4 * 5

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES V x 3 W

Signed/Sampler: [signature] Date: 10/21/86

Signed/Reviewer: [signature] Date: 10/25/86

WELL SAMPLING DATA FORM

Well Number: T7-1 Date: 10/12/86 Time: 0800
Boring Diameter: 8" Well Casing Diameter: 2"
Annular Space Length: 10.5 Stickup: 2.7'

WATER LEVEL

Held: 5.0
Cut: 0.50
DTW: 4.50 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18.0'
DTW Top of Casing: 4.50'
Column of Water in Well: 13.5'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	10.5
Volume of Annular Space	=	4.10
Gallons per foot of Casing	=	.1632
Column of Water	X	13.5
Volume of Casing	=	2.20
Total Volume (Volume of A.S. + Volume of Casing)	=	6.30
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	31.50

Method of Purging (pump, bailer, etc.): pump

FIELD ANALYSES

	Start	Mid	End
Time	08:12	08:15	08:27
pH	5.8	5.7	5.7
Conductivity	129	69	66
Temperature	25.5	25.8	26.2

Total Volume Purged: 50 gallons
Sample Time: 08:45 Sample Number: TYNDL 5*1 5*4

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [signature] Date: 10/12/86
Signed/Reviewer: [signature] Date: 10/21/86

WELL SAMPLING DATA FORM

Well Number: T7-2 Date: 10/9/83 Time: 10.39
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 10.5 Stickup: 2.7

WATER LEVEL

Held: 6.0'
Cut: .72'
DTW: 5.28 Top of Casing

COLUMN OF WATER IN WELL

17.50

Casing Length: 17.50
DTW Top of Casing: 5.28
Column of Water in Well: 12.22

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	10.50
Volume of Annular Space	=	4.10
Gallons per foot of Casing	=	.1632
Column of Water	X	12.22
Volume of Casing	=	1.99
Total Volume (Volume of A.S. + Volume of Casing)	=	6.09
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	30.47

Method of Purging (pump, bailer, etc.): CENT [illegible]

FIELD ANALYSES

	Start	Mid	End
Time	[illegible]	1147	1221
pH	6.5	5.4	5.5
Conductivity	173	75	49
Temperature	30.1	27.1	27.7

Total Volume Purged: 31 gallons
Sample Time: 1230 Sample Number: [illegible]

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [illegible] Date: [illegible]
Signed/Reviewer: [illegible signature] Date: 10/21/86

WELL SAMPLING DATA FORM

Well Number: T7-3 Date: [illegible] Time: [illegible]

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 7.5' Stickup: 2.4

WATER LEVEL

Held: 5.0

Cut: 1.20

DTW: 3.80 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18.0'

DTW Top of Casing: 3.8

Column of Water in Well: 14.2'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	7.5
Volume of Annular Space	=	2.93
Gallons per foot of Casing	=	.1632
Column of Water	X	14.2
Volume of Casing	=	2.32
Total Volume (Volume of A.S. + Volume of Casing)	=	5.24
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	26.2

Method of Purging (pump, bailer, etc.): CENTRIFUGAL

FIELD ANALYSES

	Start	3rd Mid	End
Time	09:50	10:01	10:14
pH	6.2	5.1	4.8
Conductivity	98	98	98
Temperature	25.4	25.5	25.9

5gal
5
5
5
5
5

Total Volume Purged: 40 gal gallons

Sample Time: 10:15 Sample Number: TIHDL 5*3

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	3	T	UP	Z

NOTES

Signed/Sampler: Rm Date: [illegible]

Signed/Reviewer: [signature] Date: 10/21/86

WELL SAMPLING DATA FORM

Well Number: BWT-7-1 Date: 1/9/85 Time: 14:1

Boring Diameter: ______ Well Casing Diameter: ______

Annular Space Length: ______ Stickup: ______

WATER LEVEL

Held: ______

Cut: ______

DTW: ______ Top of Casing

COLUMN OF WATER IN WELL

Casing Length: ______

DTW Top of Casing: ______

Column of Water in Well: ______

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart) = ______

Column of Water or Length of A.S. (whichever is less) X ______

Volume of Annular Space = ______

Gallons per foot of Casing = ______

Column of Water X ______

Volume of Casing = ______

Total Volume (Volume of A.S. + Volume of Casing) = ______

Number of Volumes to be Evacuated X ______

Total Volume to be Evacuated = ______

Method of Purging (pump, bailer, etc.): 1:30pm START 14:12

FIELD ANALYSES

	Start	Mid	End
Time	14:15	14.32	14:4
pH	7.9	7.7	7.5
Conductivity	1331	1310	1307
Temperature	23°	23.5	23.7

Total Volume Purged: 517 gallons

Sample Time: 14:50 Sample Number: TVNDL 5

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [signature] Date: 1/9/85

Signed/Reviewer: [signature] Date: 10/21/86

PRESSURE TANK ≈ 6.32 GAL 5.1'

WELL SAMPLING DATA FORM

Well Number: T8-1   Date: [illegible]   Time: [illegible]

Boring Diameter: 6"   Well Casing Diameter: 2"

Annular Space Length: 11.3   Stickup: 2.7

WATER LEVEL

Held: 7.0

Cut: .25

DTW: 6.75   Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 18'

DTW Top of Casing: 6.75

Column of Water in Well: 11.25

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	.39
Column of Water or Length of A.S. (whichever is less)	X	11.25
Volume of Annular Space	=	4.4
Gallons per foot of Casing	=	.1632
Column of Water	X	11.25
Volume of Casing	=	1.8
Total Volume (Volume of A.S. + Volume of Casing)	=	6.22
Number of Volumes to be Evacuated	X	3 → 5
Total Volume to be Evacuated	=	18.7 → 3[illegible]

Method of Purging (pump, bailer, etc.): [illegible]

FIELD ANALYSES

	10/12 Start	10/13 Mid	10/15 End
Time	1646	1227	1608
pH	7.1	7.0	6.3
Conductivity	656	653	720
Temperature	29.9	—	25.0

Total Volume Purged: 19.0 gallons

Sample Time: 10/16/86 1130   Sample Number: TYNDL 5*5

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES: VX3 (M) Due to slow recharge of well, length of bailer cord was extended. Bailed water was noticibly darker w/ increased sediment content. Tyndall (Bombs) metals sample taken after [illegible] was extended

Signed/Sampler: [signature]   Date: 10/16/86

Signed/Reviewer: [signature]   Date: 10/21/86

Margin calculations: 2.7 +1 4 +9 13 +5 +2 +2

WELL SAMPLING DATA FORM

Well Number: T8-3 Date: 10-17-86 Time: 1250

Boring Diameter: 12' Well Casing Diameter: 4" I.D.

Annular Space Length: 15.5' Stickup: 2.5

WATER LEVEL

Meld: 6.00

Cut: 2.00

DTW: 4.0 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20'

DTW Top of Casing: 4'

Column of Water in Well: 16'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	15.5
Volume of Annular Space	=	24.3
Gallons per foot of Casing	=	0.6528
Column of Water	x	16.0'
Volume of Casing	=	10.4
Total Volume (Volume of A.S. + Volume of Casing)	=	34.7
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	104.2-173.5

Method of Purging (pump, bailer, etc.): Pumped continuously (slow rate)

Hydrolab #1

FIELD ANALYSES	Start	Mid	End
Time	1252	1316 @ 60 gal	1343 @ 120 gal.
pH	6.0	5.8	5.9
Conductivity	480	374	353
Temperature	24.5	25.2	25.1

Total Volume Purged: 120 gallons 5*8 - Extra QA set

Sample Time: 1355 Sample Number: 5*6

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES W VOA x3 → Nitrate

Signed/Sampler: [signature] Date: 10/17/86

Signed/Reviewer: [signature] Date: 10/22/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T8-4 Date: 10/23/86 Time: 0910

Boring Diameter: 12" Well Casing Diameter: 4." I.D.

Annular Space Length: 16.5' Stickup: 3.8'

WATER LEVEL

Held: -8.00'

Cut: 1.14

DTW: -6.86' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.8

DTW Top of Casing: 6.86

Column of Water in Well: 15,94

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	15.94
Volume of Annular Space	=	25.0
Gallons per foot of Casing	=	0.6528
Column of Water	x	15.94
Volume of Casing	=	10.4
Total Volume (Volume of A.S. + Volume of Casing)	=	35.4
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	106.2 - 177

Method of Purging (pump, bailer, etc.): Pumped continuously

FIELD ANALYSES	Start	Mid	End
Time	0928 @ 5 gal	1000 @ 60 gal	1025 @ 120 gal.
pH	6.0	5.8	5.8
Conductivity	233	239	185
Temperature	22.5	24.4	25.8

Total Volume Purged: 120 gallons

Sample Time: 1030 Sample Number: 5*7

FRACTIONS

B C CF CL F H M N NF

O P R RP RS S T UP Z

To Brooks

NOTES W VX3

Signed/Sampler: [signature] Date: 10/23/86

Signed/Reviewer: [signature] Date: 10/23/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T9-1 Date: 10/12/85 Time: 17:22

Boring Diameter: 6" Well Casing Diameter: 2"

Annular Space Length: 15.7 Stickup: 2.8

WATER LEVEL

Held: 8.0

Cut: 1.0

DTW: 7.0 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.0

DTW Top of Casing: 7.0

Column of Water in Well: 16'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	15.7
Volume of Annular Space	=	6.1
Gallons per foot of Casing	=	.1632
Column of Water	X	16.0
Volume of Casing	=	2.6
Total Volume (Volume of A.S. + Volume of Casing)	=	8.7
Number of Volumes to be Evacuated	X	3 → 5
Total Volume to be Evacuated	=	26.2 → 43.7

Method of Purging (pump, bailer, etc.): CENT

FIELD ANALYSES

	HYDRO Start	10/13 Mid HYDRO	End	
Time	17:38	12:48	12:57	13:09
pH	5.5	5.1	4.7	4.6
Conductivity	93	087	88	34
Temperature	25.8	26.8	26.9	26.9

Total Volume Purged: 70 gallons

Sample Time: 14.10 Sample Number: TYNDL 6K9

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	NP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [signature] Date: [illegible]

Signed/Reviewer: [signature] Date: 10/24/86

WELL SAMPLING DATA FORM

Well Number: 9.2 Date: 10/12/86 Time: 17:50
Boring Diameter: 6" Well Casing Diameter: 2"
Annular Space Length: 16.1 Stickup: 2.4

WATER LEVEL

Held: 8.0
Cut: 1.1
DTW: 6.9 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.0'
DTW Top of Casing: 6.9
Column of Water in Well: 16.1

VOLUME TO BE REMOVED

10/12 [illegible]

Gallons per foot of A.S. (from chart)	=	0.39
Column of Water or Length of A.S. (whichever is less)	X	16.1
Volume of Annular Space	=	6.3
Gallons per foot of Casing	=	.1632
Column of Water	X	16.1
Volume of Casing	=	2.6
Total Volume (Volume of A.S. + Volume of Casing)	=	8.9
Number of Volumes to be Evacuated	X	3 → 5
Total Volume to be Evacuated	=	26.7 → 44.5

4 gal
3 gal
4
11 gal

Method of Purging (pump, bailer, etc.): CSW

FIELD ANALYSES

	10/12 Start	10/13 Mid	End
Time	1802	13:27	13:34
pH	5.5	5.0	4.9
Conductivity	102	99	98
Temperature	25.9	27.2	27.2

Total Volume Purged: 46 gallons
Sample Time: 14:48 Sample Number: TVW-[illegible]

FRACTIONS

B	C	CP	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

Signed/Sampler: [signature] Date: 10/13
Signed/Reviewer: [signature] Date: 10/24/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T9-3 Date: 10/18/86 Time: 1250
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17.5 Stickup: 2.33'

WATER LEVEL

Held: 10.00
Cut: 1.65
DTW: 8.35 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.3
DTW Top of Casing: 8.3
Column of Water in Well: 14.0

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	14.0
Volume of Annular Space	=	22.0
Gallons per foot of Casing	=	0.6528
Column of Water	x	14.0
Volume of Casing	=	9.1
Total Volume (Volume of A.S. + Volume of Casing)	=	31.1
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	933-155.5

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	1254 @ 5 gal	1319 @ 81 gal	@ 155 gal
pH	5.6	5.7	5.8
Conductivity	98	102	107
Temperature	29.4	29.6	28.9

100 gal. @ 1325 10/18

Total Volume Purged: 155 gallons

Sample Time: 1310 Sample Number: G#11 / G#13 (see note below)

10/21 55 gal purged

FRACTIONS

B C CF ED CL F H M N NF
O P R VXS RP RS S T UP Z

NOTES Zone 9 QA (ED) Sample taken. However, only ESE (white label) sample container located. JRM indicated Zone 9 QA (ED) sample was taken 10/12 @ Well T9-1. Possibly he used Brooks (Blue Label) container??

Signed/Sampler: [signature] Date: 10/21/86
Signed/Reviewer: [signature] Date: 10/25/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T9-4 Date: 10/18/86 Time: 1415

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17' Stickup: 2.15'

WATER LEVEL

Held: 10.00'

Cut: 1.35'

DTW: 8.65' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21'

DTW Top of Casing: 8.65'

Column of Water in Well: 12.35'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	12.35
Volume of Annular Space	=	19.4
Gallons per foot of Casing	=	0.6528
Column of Water	x	12.35
Volume of Casing	=	8.1
Total Volume (Volume of A.S. + Volume of Casing)	=	27.5
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	82.5 - 137.5

Method of Purging (pump, bailer, etc.): Pumping (not continuous)

95 gal @ 1700 10/18

Hydrolab #1

FIELD ANALYSES

	Start	Mid	End
Time	1422 @ 5 gal.	1578 @ 60 gal	1210 [10/21] @ 120 g.
pH	4.9	5.0	5.1
Conductivity	92	88	83
Temperature	28.6	35.3	28.2

8 10/21
6
5
6
25 g

Total Volume Purged: 120 gallons

Sample Time: 1215 Sample Number: 6 * 12

FRACTIONS

B C CF CL F H M N NF

O P R RP RS S T UP Z

NOTES water dumped into adjacent O/W separator during purging due to visible oil sheen on surface

VX3 + ED

Signed/Sampler: [signature] Date: 10/21/86

Signed/Reviewer: [signature] Date: 10/23/86

To Brooks

WELL SAMPLING DATA FORM

Well Number: T10-1 Date: 10/18/86 Time: 1505
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17.0' Stickup: 3.3'

WATER LEVEL

Held: -11.0
Cut: 0.8
DTW: -10.2' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.2'
DTW Top of Casing: -10.2'
Column of Water in Well: 13'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	13'
Volume of Annular Space	=	20.4
Gallons per foot of Casing	=	0.6528
Column of Water	X	13'
Volume of Casing	=	8.5
Total Volume (Volume of A.S. + Volume of Casing)	=	28.9
Number of Volumes to be Evacuated	X	3 - 5
Total Volume to be Evacuated	=	86.7-144.5

Method of Purging (pump, bailer, etc.): Pumping - not continuous

Volume Purged
9 gal.
9
18 @ 1650 10/18
8 1%.
7
9
5
7
11
8
9
6
88 gal total @ 1655 10/19
7
95 gal 10/20/80

Hydrolab #2

FIELD ANALYSES

	Start	Mid	End
Time	1510 @ 5 gal	1456 @ 54 gal.	1002 @ 95 gal
pH	6.4	6.3	6.4
Conductivity	442	453	453
Temperature	26.3	26.9	25.2

Total Volume Purged: 95 gallons
Sample Time: 1015 Sample Number: 4 # 7

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES: W + 34V

Signed/Sampler: [signature] Date: 10/20/86
Signed/Reviewer: [signature] Date: 10/22/86

WELL SAMPLING DATA FORM

Well Number: T10-2 Date: 10/18/86 Time: 1500

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17' Stickup: 2.6'

WATER LEVEL

Held: 12.0'

Cut: 1.6'

DTW: 10.4' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: ~~20~~ 22.5'

DTW Top of Casing: 10.4'

Column of Water in Well: 12.1'

VOLUME TO BE REMOVED

			Gallons Purged
Gallons per foot of A.S. (from chart)	=	1.57	
Column of Water or Length of A.S. (whichever is less)	x	12.1	
Volume of Annular Space	=	19.0	
Gallons per foot of Casing	=	0.6528	
Column of Water	x	12.1	
Volume of Casing	=	7.9	
Total Volume (Volume of A.S. + Volume of Casing)	=	26.9	
Number of Volumes to be Evacuated	x	3 - 5	10
Total Volume to be Evacuated	=	80.7 - 134.5	9

19 @1645 10/18

Method of Purging (pump, bailer, etc.): Pumping - not continuous

Hydrolab #2

FIELD ANALYSES

	Start	Mid	End
Time	1502@5gal	1508 @56 gal	1020 0937 @95gal
pH	5.9	5.7	5.4
Conductivity	284	134	152
Temperature	26.8	27.0	24.6

9 gal 10/19
9 gal
6 gal
7 "
9 "
7
7
7
7

Total Volume Purged: 95 gallons

Sample Time: 0940 Sample Number: 4x8

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

86 gal total @ 1705 10/19
9
95 gal total 10/20

NOTES

Foam forms on surface of purged water

W + OX5

Signed/Sampler: Date: 10/20/86

Signed/Reviewer: Date: 10/22/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: TIO-3 Date: 10/18/86 Time: 1335

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 15.5' Stickup: 2.15'

WATER LEVEL

Held: 6.00

Cut: 1.15

DTW: 4.85 Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.1'

DTW Top of Casing: 4.85'

Column of Water in Well: 17.25'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	15.5
Volume of Annular Space	=	24.34
Gallons per foot of Casing	=	0.6528
Column of Water	x	17.25
Volume of Casing	=	11.26
Total Volume (Volume of A.S. + Volume of Casing)	=	35.6
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	106.8 - 178

Method of Purging (pump, bailer, etc.): Continuous pumping

Hydrolab #2

FIELD ANALYSES	Start	Mid	End 10/20/86
Time	1342 @ 6 gal	1433 @ 92 gal	0853 @ 180 gal
pH	5.0	4.9	~~5.4~~ RR 5.2
Conductivity	54	51	57
Temperature	26.9	27.9	24.9

130 gal @ 1454 10/18

+ 50 gal @ 0850 10/20

Total Volume Purged: 180 gallons

Sample Time: 0910 Sample Number: 4*10 4*9

FRACTIONS

B C CF CL F H M D NF

O P R RP RS S T UP Z

NOTES

Water clean during purging

W + 3AV + QA

Entire QA set

Signed/Sampler: [signature] Date: 10/20/86

Signed/Reviewer: Mark J Jordan Date: 10/22/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T11-1 Date: 10/18/86 Time: 1546

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17' Stickup: 2.3'

WATER LEVEL

Held: -5.0'

Cut: 0.6'

DTW: -4.4' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.0'

DTW Top of Casing: 4.4'

Column of Water in Well: 17.6'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	17'
Volume of Annular Space	=	26.7
Gallons per foot of Casing	=	0.6528
Column of Water	X	17.6
Volume of Casing	=	11.5
Total Volume (Volume of A.S. + Volume of Casing)	=	38.2
Number of Volumes to be Evacuated	X	3-5
Total Volume to be Evacuated	=	114.6-191

Method of Purging (pump, bailer, etc.): Continuous pumping

Hydrolab #2

FIELD ANALYSES	Start	Mid	End	
Time	1550 @ 5 gal	1616 @ 95 gal	1145 @ 191 gal	140 gal @ 1630 10/18
pH	~~5~~ 5.2	5.1	4.9	
Conductivity	201	154	159	
Temperature	25.3	26.2	25.4	+51 gal 10/20

Total Volume Purged: 191 gallons

Sample Time: 1200 Sample Number: 4711

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES W + 3XV

~~Foam on surface of purged water~~ ← at 11-3, not 11-1

Signed/Sampler: P Q [signature] Date: 10/20/86

Signed/Reviewer: Mark J. Jordan Date: 10/22/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T11-2 Date: 10/18/86 Time: 1520

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17.0' Stickup: 2.2'

WATER LEVEL

Held: 10.0'

Cut: 1.3'

DTW: 8.7' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.2'

DTW Top of Casing: 8.7'

Column of Water in Well: 13.5'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	13.5
Volume of Annular Space	=	21.2
Gallons per foot of Casing	=	0.6528
Column of Water	x	13.5
Volume of Casing	=	8.8
Total Volume (Volume of A.S. + Volume of Casing)	=	30.0
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	90 - 150

Method of Purging (pump, bailer, etc.): Pumped (not continuous)

Volume Purged
13 gal
11
24 @ 1636 10/18
~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ ~~||||~~ |
12 @ 1103 10/19
+ 2 @ 10?? 10/20

Hydrolab #2

FIELD ANALYSES

	Start	Mid 10/19	End
Time	1536 @ 5 gal	1023 @ 78 gal	1040 @ 150
pH	5.7	5.3	5.3
Conductivity	196	228	236
Temperature	25.5	25.8	25.0

Total Volume Purged: 150 gallons

Sample Time: 1045 Sample Number: 4*12

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES

~~Suds~~ Foam forms on surface of purging bucket

W + 3XV

Signed/Sampler: [signature] Date: 10/20/86

Signed/Reviewer: [signature] Date: 10/22/86

D-WR85.1/SAMPFORM.1
03/15/85

WELL SAMPLING DATA FORM

Well Number: T11-3 Date: 10/19/86 Time: 0915
Boring Diameter: 12" Well Casing Diameter: 4" ID
Annular Space Length: 17' Stickup: 2.2'

WATER LEVEL

Held: -7.00'
Cut: 1.15'
DTW: -5.85' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.90'
DTW Top of Casing: -5.85'
Column of Water in Well: 15.05'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	15.05
Volume of Annular Space	=	23.6
Gallons per foot of Casing	=	0.6528
Column of Water	x	15.05
Volume of Casing	=	9.8
Total Volume (Volume of A.S. + Volume of Casing)	=	33.4
Number of Volumes to be Evacuated	x	3 - 5
Total Volume to be Evacuated	=	100.2 - 167.0

~~HH~~ ~~HH~~ ~~HH~~ 111 ~~HH HH~~ 140 @ 1303 10/19

Method of Purging (pump, bailer, etc.): Pumping (not continuous)

FIELD ANALYSES

Hydrolab #1

	Start	Mid	End
Time	9:45 @ 5 gal	11:40 @ 85	11/15 @ 170 gal
pH	6.4	6.3	6.5
Conductivity	994	795	906
Temperature	26.4	27.9	25.1

+ 30 170 @ 10/20

Total Volume Purged: 170 gallons
Sample Time: 1120 Sample Number: 4413

FRACTIONS

B C CF CL F H M N NF
O P R RP RS S T UP Z

NOTES W + 3XV
Water foamy during purging

Signed/Sampler: [signature] Date: 10/20/86
Signed/Reviewer: [signature] Date: 10/22/86

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APPENDIX N

SAMPLE COLLECTION DATA

- SURFACE WATER SAMPLING DATA LOGS
- SEDIMENT SAMPLING DATA LOGS
- SOIL SAMPLING DATA LOGS

SURFACE WATER SAMPLING DATA LOGS

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SURFACE WATER SAMPLING

SAMPLE LOCATION:

LYNN [illegible] [illegible]

DATE 10/14/86 TIME 13:5[illegible]

SAMPLE DEPTH SURFACE WATER DEPTH .5'

SAMPLE NUMBER SWLA2 TNDY- 2x9

FIELD PARAMETERS:

pH 7.1 CONDUCTIVITY 1355

D.O. 3.8

TEMPERATURE: AIR 23.7 WATER 24.8

FRACTIONS COLLECTED

NITRIC (SEDIMENTS - SEE SEDIMENT [illegible])

OIL+GREASE x2

VOA x3

WEATHER CONDITIONS (PRIOR 3 DAYS) HEAVY [illegible] (PAST 24 [illegible]

PRIOR WEATHER PARTLY SUNNY - BREEZY

OVERCAST @ SAMPLING

GENERAL OBSERVATIONS WATER SURFACE FAIRLY WELL

PROTECTED FROM WIND - LOW TO NO FLOW

SLOPE TO WATER WELL VEGETATED

FORBES & GRASSES - [illegible]

WATER CLEAR TO BOTTOM

SIGNED [signature] REVIEWED R. [signature]

DATE 11/14/86 DATE 10/29/86

SURFACE WATER SAMPLING

SAMPLE LOCATION:

UP STREAM OF OUTFALL

DATE 10/14/86 TIME 15:20

SAMPLE DEPTH surface WATER DEPTH 6"

SAMPLE NUMBER SW 11-1

FIELD PARAMETERS:

pH 7.0 CONDUCTIVITY 2720

D.O. 5.4

TEMPERATURE: AIR 26.0 WATER 26.3

FRACTIONS COLLECTED

NITRIC	W			
OIL+GREASE				
VOA x3				

WEATHER CONDITIONS (PRIOR 3 DAYS)

GENERAL OBSERVATIONS

SIGNED [signature] REVIEWED [signature]

DATE 10/14/86 DATE 10/24/86

SURFACE WATER SAMPLING

SAMPLE LOCATION:

. D — T1-2

DATE 10/14/85 TIME 15:40

SAMPLE DEPTH SURFACE WATER DEPTH

SAMPLE NUMBER SW11-2

FIELD PARAMETERS:

pH 6.8 CONDUCTIVITY 2680

D.O. 2.2

TEMPERATURE: AIR 26.0 WATER 27.1

FRACTIONS COLLECTED

NITRIC W

OIL-GREASE

VOA x3

WEATHER CONDITIONS (PRIOR 3 DAYS)

GENERAL OBSERVATIONS

SIGNED [signature] REVIEWED [signature]

DATE 10/14/86 DATE 10/29/86

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SEDIMENT SAMPLING DATA LOGS

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FIELD DATA FORM
Sediment Sampling

Station # LH 2-SD1 Date 10/14/85
Sample # SDT2 Project: TYNDL PHASE II Sampling
TYNDL 2*9 Field Personnel JRM MJJ

STATION DESCRIPTION:

Sample Method: BUTYL TUBE SUNK TO HAND SEND ≥ 5" 3X.
+ PASSED SMALL BROWN GLASS JAR THRU SED MIX
SURFACE

Water Quality Conditions: OIL SHEEN ON SURFACE, OTHERWISE, CLEAR
SEE ALSO SW SAMPLE LOG.

Depth to Sediment .5' (6")

Sediment Type: DETRITUS

Time of Sampling 13:40

Fraction	Preservative/Amount	Container Type
SS	NONE	OIL + GREASE TYPE LARGE MASON JAR
SV	NONE	SMALL AMBER VIAL

Remarks: SITE PHOTOS TAKEN

Signature JRM Date 10/14/85

FIELD DATA FORM
Sediment Sampling

Station # SDT 11-1
Sample # TYNDL 11 #1

Date 10/14/86
Project TYNDALL PHASE II STAGE 2
Field Personnel [illegible]

STATION DESCRIPTION: UPSTREAM OF ACTIVE FIRE TRAINING OUTFALL*
*ALTHOUGH SAMPLE LOCATION IS UPSTREAM, TIDAL INFLUENCE MAY INFLUENCE WATER QUALITY AT "BACKGROUND" SAMPLE SITE. THIS MAY BE EXPECTED AT ANY POINT IN CANAL IN QUESTION, SINCE SLOPE GRADIENT IS NEGLIGIBLE.

Sample Method:

BUTYL TUBE CORE TO ≈ 5" DEPTH

PUSHED WIDEMOUTH AMBER ALONG SURFACE OF SEDIMENT

Water Quality Conditions:

Depth to Sediment ≈ 6"

Sediment Type: SAND/SILT MIX

Time of Sampling 15:40

Fraction	Preservative/Amount	Container Type
SS	NONE	MASON
SV	NONE	WIDEMOUTH AMBER

Remarks:
NO OBVIOUS SIGN OF CONTAMINATION - MINNOWS PRESENT AT SAMPLE SITE - PHOTO TAKEN

Signature [signature] Date 10/14/86

FIELD DATA FORM
Sediment Sampling

Station # SDT 11-2
Sample # TYNDL 11 #2

Date 10/14/83
Project: TYNDALL PHASE II STAGE 2
Field Personnel JRM PAR

STATION DESCRIPTION: ACTIVE FIRE TRAINING AREA OUTFALL

Sample Method:
SS = BUTYL TUBE CORE
SV : PUSHED WIDE MOUTH AMBER BOTTLE THROUGH SEDIMENT SURFACE

Water Quality Conditions:

Depth to Sediment ≈1.0'

Sediment Type: SAND/SILT

Time of Sampling 15:30

Fraction	Preservative/Amount	Container Type
SS	NONE	MASON JAR
SV	NONE	WIDE MOUTH AMBER

Remarks: NO OBVIOUS SIGN OF CONTAMINATION - MINNOWS PRESENT + BLUE CRAB DIRECTLY UNDER OUTFALL - APPEARED ADULT APPROX 5" WIDE CARAPACE.

Signature JRM Date 10/14/83

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SOIL SAMPLING DATA LOGS

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Boring No. SO T11-1 Location Coordinates N See

Hole Size 2" I.D. Slot — E Sketch

Screen Length — Mat'l — Filter Materials —

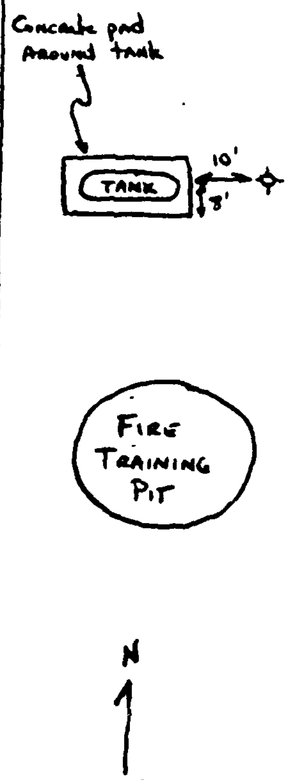
Diameter — Grout Type — "

Casing Length — Mat'l — Development —

Diameter — Static Water Level —

Date Start 10/15/86 Finish 10/15/86 Top of Well Elevation —

Contractor ESE Driller Paul Thomas Drill Type Split Spoon

Depth (feet)	Sample	Lithology, Color	Sketch of ~~Construction~~ Location	Standard Pene Blow Cou
0.0-2.0	#1 @1505	SM, Sand, Fine-to-med gr., ~5-10% silt, poorly graded, dk. brown 10YR3/2, loose, dry, mod-to-heavily oiled, not plastic - shells (fill) top 3"		12 - 8 - 12 - 1
2.0-3.5		SM, Sand, fine-to-coarse gr., ~5% silt, mod. graded, dk. brown 10YR4/2, not plastic, loose, dry-to-sl. moist, mod.-to-heavily oiled		14 - 20 - 22
3.5-5.5	#2 @1515	SP, Sand, fine-to-coarse gr., mod. graded top 6"; becomes fine-to-med gr. lower 18", poorly graded, gray 10YR5/1, loose, not plastic, sl. moist, lightly oiled		14 - 22 - 32 -
5.5-7.0		SP, Sand, fine-to-med. gr., poorly graded, dk. brown 10YR3/2, loose-to-mod. stiff (oiled areas), not plastic-to-mod. plastic (oiled areas), moist to wet, lt.-to-heavily oiled		18 - 21 - 18
7.0-9.0		SP, Sand, fine-to-med. gr., poorly graded, lt. gray 10YR7/2, becomes v. dk. brown 10YR2/2 lower 18" (heavily oiled), mod. plastic, saturated		14 - 20 - 20 -
9.0'		END OF BORING		

SOURCE: Environmental Science and Engineering, I

Boring No. SO TII-1 SHEET 1 OF 1

10/15/86

1440 - Set up rig inside ring of fire training pit, level rig, clean equipment, set up De-Con statio

1445 - Begin split spoon boring, encounter concrete pad underlying pit

1450 - Abandon site, select new site

1455 - Set up rig on new site, level rig, set up De-Con station

1500 - Begin split spoon boring, advance to 2.0 ft.

1505 - Sample # 1 taken; advance to 3.5 ft.

1510 - Advance to 5.5 ft.

1515 - Sample #2 taken; advance to 7.0 ft.

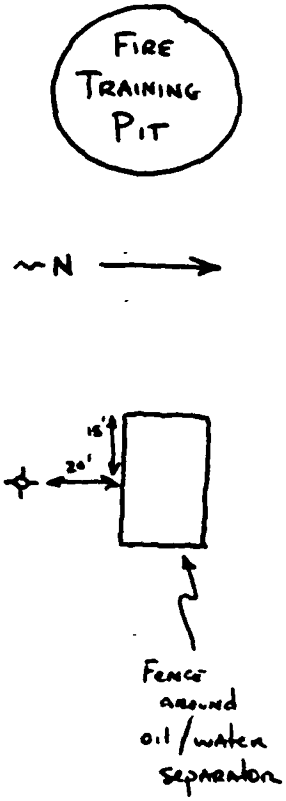
1520 - Advance to 9.0 ft.; hammer on rig shears; termination of boring

10/15/86
DATE

SIGNED

SOURCE: Environmental Science and Engineering, Inc.,

Boring No. SO T11-2 Location Coordinates N See
Hole Size 2" I.D. Slot — E Sketch
Screen Length — Mat'l — Filter Materials —
Diameter — Grout Type —
Casing Length — Mat'l — Development —
Diameter — Static Water Level —
Date Start 10/16/86 Finish 10/16/86 Top of Well Elevation —
Contractor ESE Driller Paul Thomas Drill Type Split Spoon

Depth (feet)	Sample	Lithology, Color	Sketch of ~~Construction~~ Location	Standard Pene[tration] Blow Cou[nts]
0.0-2.0	#1 @840	SP Sand, fine-to-med gr., poorly graded, dk. grayish brown 10YR4/2, not plastic, loose, moist, mod. oiled		4-6-6-
2.0-3.5		SP Sand, fine-to-med gr., poorly graded, dk. grayish brown 10YR4/2, not plastic, loose, moist to wet, mod. oiled		8-12-15
3.5-5.5	#2 @845	SP, Sand, fine-to-med gr., poorly graded, lt. gray 10YR7/1, sl. plastic, loose-to-med. dense, wet to saturated		8-18-30-
5.5-7.0		SP, Sand, continuation of above		12-18-32
7.0-9.0		SP, Sand, continuation of Above		18-30-43
9.0-10.5		SP, Sand, continuation of above		32-36-3[illegible]
10.5		END OF BORING		

SOURCE: Environmental Science and Engineering, In[c.]

Boring No. SO T11-2 SHEET 1 OF

10/16/86

0830	Set up rig on site, level rig, clean equipment, set up DE-CON station -
0835	Begin split spoon boring, advance to 2.0 ft.
0840	Sample # 1 taken, advance to 3.5 ft.
0845	Advance to 5.5 ft, sample # 2 taken, advan to 7.0 ft.
0850	Advance to 9.0 ft.
0855	Advance to 10.5 ft., terminate boring
0900	Equipment dismantled, depart site

10/16/86
DATE

SIGNED

SOURCE: Environmental Science and Engineering, Inc.,

Boring No. SO T11-3 Location Coordinates N See

Hole Size 2" I.D. Slot — E Sketch

Screen Length — Mat'l — Filter Materials —

Diameter — Grout Type —

Casing Length — Mat'l — Development —

Diameter — Static Water Level —

Date Start 10/16/86 Finish 10/16/86 Top of Well Elevation —

Contractor ESE Driller PAUL THOMAS Drill Type SPLIT SPOON

Depth (feet)	Sample	Lithology, Color	Sketch of ~~Construction~~ LOCATION	Standard Pene[tration] Blow Cou[nt]
0.0-2.0	# 1 @0915	SP, Sand, fine-to-med. gr., poorly graded, gray 10YR6/2 not plastic, loose, dry, sl.-to-mod. oiled		2-4-8-C
2.0-3.5		SP, Sand, fine-to-med. gr., poorly graded, lt. gray 10YR7/1, not plastic, loose, dry-to-moist, sl. oiled (odorous - no discoloration)	FIRE TRAINING PIT	10-11-18
3.5-5.5	# 2 @0920	SM Sand, fine-to-med. gr., ~5% silt, poorly graded, med. plastic, buff 10YR6/3, med. dense, moist-to-wet, sl. odor, no discoloration	~N →	12-20-26-
5.5-7.0		SM Sand, fine-to-med. gr., ~5% silt, poorly graded, white 10YR8/1 from 5.5-6.2 ft.; becomes lt. brown 10YR6/3 from 6.2-7.0 ft., mod. plastic, med. dense to dense, saturated	12' 20' Fence around oil/water separator	22-36-4C
7.0-9.0		SM, continued from above to 7.8 ft.; becomes SP, Sand, fine-to-med gr., poorly graded, gray 10YR6/1, mod. plastic, dense saturated		18-22-30
9.0-10.5		SP, Sand, continuation of Above		10-10-13

10.5 END OF BORING

Boring No. SO T11-3 SHEET 1 OF

10/16/86

0905	Set up rig on site, level rig, clean equipment; set up DE-CON station
0910	Begin split spoon boring, advance to 2.0 ft.
0915	Take sample # 1; advance to 3.5 ft.
0920	Advance to 5.5 ft., sample # 2 taken
0925	Advance to 7.0 ft.
0930	Advance to 9.0 ft.
0935	Advance to 10.5 ft.; termination of boring
0940	Clean up and stow equipment, prepare rig for travel
0945	Depart site

10/16/86
DATE

SIGNED

SOURCE: Environmental Science and Engineering, Inc., I

APPENDIX O

MONITOR WELL DEVELOPMENT LOGS

03/15/85

DEVELOPMENT WELL ~~SAMPLING~~ DATA FORM

Well Number: LH2-8 Date: 10/17/86 Time: 0840

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 16.7' Stickup: 2.2'

WATER LEVEL

Held: ~ 7.00'

Cut: 0.95'

DTW: ~ 6.05' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21.70'

DTW Top of Casing: 6.05'

Column of Water in Well: 15.65'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	15.65
Volume of Annular Space	=	24.57
Gallons per foot of Casing	=	0.6528
Column of Water	X	15.65
Volume of Casing	=	10.22
Total Volume (Volume of A.S. + Volume of Casing)	=	34.79
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	174 gal.

Method of Purging (pump, bailer, etc.): Continuously pumped

FIELD ANALYSES	Start	Mid	End
Time	0925 @ 5 gal	0948 @ 85 gal.	1025 @ 175 gal
pH	6.8	6.0	5.9
Conductivity	264	342	341
Temperature	26.2	27.1	27.9

Total Volume Purged: 175 gallons

~~Sample Time~~: ______ ~~Sample Number~~: ______

FRACTIONS

B C CF CL F H M N NF

O P R RP RS S T UP Z

NOTES Water sediment free but slightly discolored upon completion of development.

Signed/~~Sampler~~ Developer: [signature] Date: 10/17/86

Signed/Reviewer: ______ Date: ______

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: LH2-9 Date: 10/17/86 Time: 0850
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 16.6' Stickup: 3.1'

WATER LEVEL

Held: -7.00'
Cut: 1.05'
DTW: -5.95' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.10'
DTW Top of Casing: 5.95'
Column of Water in Well: 16.15'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	16.15
Volume of Annular Space	=	25.36
Gallons per foot of Casing	=	0.6528
Column of Water	X	16.15
Volume of Casing	=	10.54
Total Volume (Volume of A.S. + Volume of Casing)	=	35.90
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	180 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES	Start	Mid	End
Time	1047 @ 5 gal	1153 @ 90 gal	1336 @ 200 gal
pH	5.7	5.3	5.3
Conductivity	236	225	258
Temperature	27.2	29.1	28.5

Total Volume Purged: 200 gallons

~~Sample Time~~: ~~Sample Number~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment free but discolored upon completion of development.

Signed/Developer ~~Sampler~~: [signature] Date: 10/17/86
Signed/Reviewer: Date:

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T3-5   Date: 10/12/86   Time: 0835

Boring Diameter: 12"   Well Casing Diameter: 4" I.D.

Annular Space Length: 16.5'   Stickup: 2'

WATER LEVEL

Held: -6.0'

Cut: 0.9'

DTW: -5.1'   Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.5'

DTW Top of Casing: -5.1'

Column of Water in Well: 15.4'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	15.4
Volume of Annular Space	=	24.2
Gallons per foot of Casing	=	0.6528
Column of Water	X	15.4
Volume of Casing	=	10.1
Total Volume (Volume of A.S. + Volume of Casing)	=	34.2
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	171 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES	Start	Mid	End
Time	0901 @ 5 gal	0910 @ 90 gal	0931 @ 300 gal
pH	6.0	6.1	6.2
Conductivity	393	318	304
Temperature	25.5	26.0	26.2

Total Volume Purged: 300 gallons

~~Sample Time~~:   ~~Sample Number~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Approx 6-8" sand in well at onset of development; all sa removed during development. Water slightly odorous. Water wa relatively clean upon completion of development

Signed/~~Sampler~~: Developer [signature]   Date: 10/12/86

Signed/Reviewer: Date:

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T3-6 Date: 10/12/86 Time: 0840

Boring Diameter: 12" Well Casing Diameter: 4"

Annular Space Length: 16.5' Stickup: 2.0'

WATER LEVEL

Held: -7.0'

Cut: 1.1'

DTW: -5.9' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.9'

DTW Top of Casing: -5.9'

Column of Water in Well: 15.0'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	15.0
Volume of Annular Space	=	23.6
Gallons per foot of Casing	=	0.6528
Column of Water	X	15.0
Volume of Casing	=	9.8
Total Volume (Volume of A.S. + Volume of Casing)	=	33.4
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	167 gal

Method of Purging (pump, bailer, etc.): Continuously pumped

FIELD ANALYSES

	Start	Mid	End	
Time	0920 @ 5gal	0925	0934	0937
pH	6.3	7.5	6.1	6.2
Conductivity	294	353	362	374
Temperature	25.7	26.2	26.1	26.1

Total Volume Purged: 240 gallons

~~Sample Time~~: ________ ~~Sample Number~~: ________

FRACTIONS

B C CF CL F F M N NF

O P R RP RS S T UP Z

NOTES Water relatively clean upon completion of development.

Signed/~~Sampler~~ DEVELOPER: [signature] Date: 10/12/86

Signed/Reviewer: ________ Date: ________

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T3-7 Date: 10/18/86 Time: 1020

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 16.2' Stickup: 3.35'

WATER LEVEL

Held: -9.00'

Cut: 1.62'

DTW: -7.38' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.85'

DTW Top of Casing: - 7.38'

Column of Water in Well: 15.47'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	15.47
Volume of Annular Space	=	24.29
Gallons per foot of Casing	=	0.6528
Column of Water	x	15.47
Volume of Casing	=	10.1
Total Volume (Volume of A.S. + Volume of Casing)	=	34.4
Number of Volumes to be Evacuated	x	5
Total Volume to be Evacuated	=	172 gal.

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES	Start	Mid	End
Time	1042 @ 5 gal.	1235 @ 85 gal	1401 @ 175 gal
pH	6.0	5.2	5.2
Conductivity	92	74	70
Temperature	24.5	28.1	28.6

Total Volume Purged: 175 gallons

~~Sample Time~~: ~~Sample Number~~:

FRACTIONS

B C CF CL F H M N NF

O P R RP RS S T UP Z

NOTES Water sediment-free but slightly cloudy at end of development.

Signed/~~Sampler~~ Developer: [signature] Date: 10/18/86

Signed/Reviewer: Date:

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T6-4 Date: 10/11/86 Time: 1626

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17' Stickup: 1.6'

WATER LEVEL

Held: -6.0'

Cut: 0.6'

DTW: -5.4' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.6'

DTW Top of Casing: -5.4'

Column of Water in Well: 15.2'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	15.2
Volume of Annular Space	=	23.9
Gallons per foot of Casing	=	0.6528
Column of Water	X	15.2
Volume of Casing	=	9.9
Total Volume (Volume of A.S. + Volume of Casing)	=	33.8
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	169 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES	Start	Mid	End
Time	1715 @ 5gal	1811	1828
pH	5.3	5.0	6.0
Conductivity	140	133	226
Temperature	27.0	27.3	26.8

Total Volume Purged: 205 gallons

~~Sample Time~~: ~~Sample Number~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment-free but still very discolored upon completion of development

Signed/~~Sampler~~ Developer: [signature] Date: 10/11/86

Signed/Reviewer: Date:

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T6-5 Date: 10/16/86 Time: 1250

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 16.1' Stickup: 2.9'

WATER LEVEL

Held: -10.0'

Cut: 3.2'

DTW: -6.8' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.4'

DTW Top of Casing: - 6.8'

Column of Water in Well: 15.6'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	15.6
Volume of Annular Space	=	24.49
Gallons per foot of Casing	=	0.6528
Column of Water	X	15.6
Volume of Casing	=	10.18
Total Volume (Volume of A.S. + Volume of Casing)	=	34.67
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	173 gal

Method of Purging (pump, bailer, etc.): Continuously pumped

FIELD ANALYSES

	Start	Mid	End
Time	1257 @ 22 gal	1302 @ 30 gal	1325 @ 300 gal
pH	6.2	5.7	5.7
Conductivity	142	137	142
Temperature	24.1	24.2	24.4

Total Volume Purged: 300 gallons

~~Sample Time~~: ~~Sample Numbers~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment-free but slightly cloudy upon completion of development.

Signed/Developer ~~Sampler~~: Date: 10/16/86

Signed/Reviewer: Date:

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T8-3 Date: 10/11/86 Time: 1212

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 15.5' Stickup: 2.4'

WATER LEVEL

Held: - 5.0'

Cut: 0.5'

DTW: - 4.5' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 20.0'

DTW Top of Casing: - 4.5'

Column of Water in Well: 15.5'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	15.5
Volume of Annular Space	=	24.3
Gallons per foot of Casing	=	0.6528
Column of Water	x	15.5
Volume of Casing	=	10.1
Total Volume (Volume of A.S. + Volume of Casing)	=	34.5
Number of Volumes to be Evacuated	x	5
Total Volume to be Evacuated	=	172 gal.

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	1220	1257 @ 85 gal	1340
pH	5.9	5.7	5.6
Conductivity	394	346	327
Temperature	25.4	26.0	25.9

Total Volume Purged: 173 gallons

~~Sample Time~~: ______ ~~Sample Number~~: ______

FRACTIONS

B C CF CL F H M N NF

O P R RP RS S T UP Z

NOTES Water relatively clean upon completion of development.

Signed/Developer ~~Sampler~~: [signature] Date: 10/11/8

Signed/Reviewer: ______ Date: ______

03/15/85

~~WELL SAMPLING~~ DEVELOPMENT WELL DATA FORM

Well Number: T8-4 Date: 10/18/86 Time: 0940

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17.0' Stickup: 3.75'

WATER LEVEL

Held: - 8.00'

Cut: 1.35'

DTW: - 6.65' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.0

DTW Top of Casing: - 6.65'

Column of Water in Well: 16.35'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	16.35
Volume of Annular Space	=	25.67
Gallons per foot of Casing	=	0.6528
Column of Water	x	16.35
Volume of Casing	=	10.67
Total Volume (Volume of A.S. + Volume of Casing)	=	36.34
Number of Volumes to be Evacuated	x	5
Total Volume to be Evacuated	=	182 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	1010 @ 5 gal	1100 @ 90 gal	1145 @ 185 ga
pH	6.0	5.4	5.5
Conductivity	151	216	185
Temperature	22.8	26.3	27.3

Total Volume Purged: 215 gallons

~~Sample Time~~: ~~Sample Number~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water relatively clean (slightly cloudy) at compl of development

Signed/~~Sampler~~ Developer: [signature] Date: 10/18/8(

Signed/Reviewer: Date:

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T9-3 Date: 10/12/86 Time: 1043

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17.5' Stickup: 2.3'

WATER LEVEL

Held: -9.0'

Cut: 0.7'

DTW: -8.3' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.3'

DTW Top of Casing: -8.3'

Column of Water in Well: 14.0'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	14.0
Volume of Annular Space	=	22.0
Gallons per foot of Casing	=	0.6528
Column of Water	X	14.0
Volume of Casing	=	9.1
Total Volume (Volume of A.S. + Volume of Casing)	=	31.1
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	156 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES	Start	Mid	End
Time	1104	1122	1154
pH	5.7	5.7	5.6
Conductivity	100	117	116
Temperature	28.0	28.4	28.3

Total Volume Purged: 200 gallons

~~Sample Time~~: ~~Sample Number~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment-free but slightly discolored at completion of development.

Signed/~~Sampler~~ Developer: [signature] Date: 10/12/8

Signed/Reviewer: Date:

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T9-4 Date: 10/12/86 Time: 1335

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17.0' Stickup: 2.0'

WATER LEVEL

Held: - 8.95'

Cut: 0.84'

DTW: - 8.11' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 21.0'

DTW Top of Casing: - 8.11'

Column of Water in Well: 12.89'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	12.89
Volume of Annular Space	=	20.24
Gallons per foot of Casing	=	0.6528
Column of Water	x	12.89
Volume of Casing	=	8.41
Total Volume (Volume of A.S. + Volume of Casing)	=	28.65
Number of Volumes to be Evacuated	x	5
Total Volume to be Evacuated	=	143 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	1401	1546	1823
pH	4.2	5.6	5.0
Conductivity	86	81	84
Temperature	26.6	27.4	26.8

Total Volume Purged: 153 gallons

~~Sample Time~~: ~~Sample Number~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment-free but very discolored and o[c]
throughout development; All water discarded in O/
Separator

Signed/Developer ~~Sampler~~: Mark J. Jordan Date: 10/12/

Signed/Reviewer: Date:

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T10-1 Date: 10/10/86 Time: 1700

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17.0' Stickup: 3.0'

WATER LEVEL

Held: -11.0'

Cut: 1.05'

DTW: -9.95' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 23.0'

DTW Top of Casing: - 9.95'

Column of Water in Well: 13.05'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	13.05
Volume of Annular Space	=	20.5
Gallons per foot of Casing	=	0.6528
Column of Water	X	13.05
Volume of Casing	=	8.5
Total Volume (Volume of A.S. + Volume of Casing)	=	29.0
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	145 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES	Start	Mid	End
Time	1733	1352 (10/11)	1600 (10/12)
pH	6.9	6.4	6.6
Conductivity	553	507	495
Temperature	26.2	26.7	25.8

Total Volume Purged: 147 gallons

~~Sample Time~~: ~~Sample Number~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water very clean upon completion of development

Signed/~~Sampler~~ Developer: [signature] Date: 10/12/87

Signed/Reviewer: Date:

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T10-2 Date: 10/10/86 Time: 1405
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17.0' Stickup: 2.6'

WATER LEVEL

Held: -11.0'
Cut: 0.8'
DTW: -10.2' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.6'
DTW Top of Casing: -10.2'
Column of Water in Well: 12.4'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	12.4
Volume of Annular Space	=	19.5
Gallons per foot of Casing	=	0.6528
Column of Water	X	12.4
Volume of Casing	=	8.1
Total Volume (Volume of A.S. + Volume of Casing)	=	27.6
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	138 GAL

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	1430	1807	1158 (10/11/86)
pH	6.6	6.3	7.1
Conductivity	336	230	233
Temperature	28.6	26.0	25.4

Total Volume Purged: 110 gallons
~~Sample Time~~:   ~~Sample Number~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	~~RS~~	S	T	UP	Z

NOTES Water very clear upon completion of development slightly foamy

Signed/~~Sampler~~ Developer: [signature] Date: 10/11/8
Signed/Reviewer: Date:

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: TIO-3 Date: 10/10/86 Time: 1710

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 15.5' Stickup: 2.1'

WATER LEVEL

Held: -5.0'

Cut: 0.4'

DTW: -4.6' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.1'

DTW Top of Casing: -4.6'

Column of Water in Well: 17.5'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	15.5
Volume of Annular Space	=	24.3
Gallons per foot of Casing	=	0.6528
Column of Water	X	17.5
Volume of Casing	=	11.4
Total Volume (Volume of A.S. + Volume of Casing)	=	35.8
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	179 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES	Start	Mid	End
Time	1742	1838 @ 90 gal	1022 (10/11/86)
pH	6.4	5.6	4.7
Conductivity	103	50	51
Temperature	26.6	26.8	26.7

Total Volume Purged: 180 gallons

~~Sample Time~~: ______ ~~Sample Number~~: ______

FRACTIONS

B	C	CF	CL	F	'I	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water very clean upon completion of development

Signed/~~Sampler~~ Developer: [signature] Date: 10/11/8

Signed/Reviewer: ______ Date: ______

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T11-1 Date: 10/11/86 Time: 1120

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17.0' Stickup: 2.5'

WATER LEVEL

Held: -7.0'

Cut: 0.9'

DTW: -6.1' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.5'

DTW Top of Casing: - 6.1'

Column of Water in Well: 16.4'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	x	16.4
Volume of Annular Space	=	25.7
Gallons per foot of Casing	=	0.6528
Column of Water	x	16.4
Volume of Casing	=	10.7
Total Volume (Volume of A.S. + Volume of Casing)	=	36.5
Number of Volumes to be Evacuated	x	5
Total Volume to be Evacuated	=	182 gal

Method of Purging (pump, bailer, etc.): Continuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	1422	1448	1515
pH	4.6	5.3	5.0
Conductivity	142	144	146
Temperature	25.6	26.9	26.7

Total Volume Purged: 183 gallons

~~Sample Time~~: ~~Sample Number~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water sediment-free but still discolored upon completion of development

Signed/Developer ~~Sampler~~: [signature] Date: 10/11/8

Signed/Reviewer: Date:

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T11-2 Date: 10/11/86 Time: 1125

Boring Diameter: 12" Well Casing Diameter: 4" I.D.

Annular Space Length: 17.0' Stickup: 2.5'

WATER LEVEL

Held: -9.0'

Cut: 0.6'

DTW: -8.4' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.5'

DTW Top of Casing: -8.4'

Column of Water in Well: 14.1'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	14.1
Volume of Annular Space	=	22.1
Gallons per foot of Casing	=	0.6528
Column of Water	X	14.1
Volume of Casing	=	9.2
Total Volume (Volume of A.S. + Volume of Casing)	=	31.3
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	157 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	1135	1216 @ 30 gal	1326
pH	4.9	4.9	4.8
Conductivity	198	179	180
Temperature	26.0	27.8	29.3

Total Volume Purged: 175 gallons

~~Sample Time~~: ____ ~~Sample Number~~: ____

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water slightly cloudy and slightly foamy upon completion of development

Signed/Developer ~~Sampler~~: Mark J. Jordan Date: 10/11/86

Signed/Reviewer: ____ Date: ____

03/15/85

DEVELOPMENT
WELL ~~SAMPLING~~ DATA FORM

Well Number: T11-3 Date: 10/11/86 Time: 1130
Boring Diameter: 12" Well Casing Diameter: 4" I.D.
Annular Space Length: 17.0' Stickup: 2.0'

WATER LEVEL

Held: -6.0'
Cut: 0.2'
DTW: -5.8' Top of Casing

COLUMN OF WATER IN WELL

Casing Length: 22.0'
DTW Top of Casing: -5.8'
Column of Water in Well: 16.2'

VOLUME TO BE REMOVED

Gallons per foot of A.S. (from chart)	=	1.57
Column of Water or Length of A.S. (whichever is less)	X	16.2
Volume of Annular Space	=	25.4
Gallons per foot of Casing	=	0.6528
Column of Water	X	16.2
Volume of Casing	=	10.6
Total Volume (Volume of A.S. + Volume of Casing)	=	36.0
Number of Volumes to be Evacuated	X	5
Total Volume to be Evacuated	=	180 gal

Method of Purging (pump, bailer, etc.): Discontinuous pumping

FIELD ANALYSES

	Start	Mid	End
Time	1337	1547 @ 90 gal	1842 @ 184 gal
pH	5.9	6.1	6.4
Conductivity	582	798	550
Temperature	28.2	27.9	26.5

Total Volume Purged: 184 gallons

~~Sample Time~~: ~~Sample Number~~:

FRACTIONS

B	C	CF	CL	F	H	M	N	NF
O	P	R	RP	RS	S	T	UP	Z

NOTES Water very foamy, relatively clear, slightly odorous upon completion of development

Signed/~~Sampler~~ Developer: [signature] Date: 10/11/86
Signed/Reviewer: Date:

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APPENDIX P

CHAIN-OF-CUSTODY

NVIRONMENTAL SCIENCE & ENGINEERING 10-06-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL7
ROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL7

#	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	SDT11-1		SS SV			SZ 2,11
*2	SDT11-2		SS SV			SZ 2,11
*3	SDT2-1		SS SV	[illegible]	[illegible]	SZ 2,11

TE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	[illegible] —	[illegible]
2		D Hale /ESE/ 10-15/1330
3		

THER FIELD NOTES FOR FIELD GROUP TYNDL7:

ˈIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL4
OJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL4

#	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME		PARAMETER LIST
1	GT6-1		N O VP VP VP W			Z	6,10,11
2	GT6-2		N O VP VP VP W			Z	6,10,11
3	GT6-3		N O VP VP VP W			Z	6,10,11
4	GT6-4		N O VP VP VP W			Z	6,10,11
5	GT6-5		N O VP VP VP W			Z	6,10,11
6	GT6QA		N O VP VP VP W			Z	6,10,11
7	GT10-1		N O VP VP VP W			Z	6,10,11
8	GT10-2		N O VP VP VP W			Z	6,10,11
9	GT10-3		N O VP VP VP W			Z	6,10,11
0	GT10QA		N O VP VP VP W			Z	6,10,11
1	GT11-1		N O VP VP VP W			Z	6,10,11
2	GT11-2		N O VP VP VP W			Z	6,10,11
13	GT11-3		N O VP VP VP W			Z	6,10,11
14	SWT11-1		N O VP VP VP W	[illegible]	[illegible]	Z	6,10,11
15	SWT11-2		N O VP VP VP W	[illegible]	[illegible]	Z	6,10,11

TE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	[illegible]	[illegible]
2		D. Hale/ESE/10-15/1330
3		

IER FIELD NOTES FOR FIELD GROUP TYNDL4:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL2

PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL2

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)						DATE	TIME	PARAMETER LIST
*1	GLH2-1		N	O	O	VP	VP	VP			ZONE2
*2	GLH2-2		N	O	O	VP	VP	VP	[illegible]	[illegible]	ZONE2
*3	GLH2-3		N	O	O	VP	VP	VP	[illegible]	[illegible]	ZONE2
*4	GLH2-4		N	O	O	VP	VP	VP	[illegible]	[illegible]	ZONE2
*5	GLH2-7		N	O	O	VP	VP	VP	[illegible]	[illegible]	ZONE2
*6	GLH2QA		N	O	O	VP	VP	VP			ZONE2
*7	GLH2-8		N	O	O	VP	VP	VP			ZONE2
*8	GLH2-9		N	O	O	VP	VP	VP			ZONE2
*9	SWLH2		N	O	O	VP	VP	VP			ZONE2

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	[illegible] CSE 10/14/[illegible]	[illegible]
2		
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL2:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL2
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL2

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)						DATE	TIME	PARAMETER LIST
*1	GLH2-1		N	O	O	VP	VP	VP	10/14	1115	ZONE2
*2	GLH2-2		N	O	O	VP	VP	VP		1125	ZONE2
*3	GLH2-3		N	O	O	VP	VP	VP		1425	ZONE2
*4	GLH2-4		N	O	O	VP	VP	VP		1410	ZONE2
*5	GLH2-7		N	O	O	VP	VP	VP			ZONE2
*6	GLH2QA		N	O	O	VP	VP	VP			ZONE2
*7	GLH2-8		N	O	O	VP	VP	VP			ZONE2
*8	GLH2-9		N	O	O	VP	VP	VP			ZONE2
*9	SWLH2		N	O	O	VP	VP	VP	10/14	1315	ZONE2

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	[illegible] / ESE / 10/14 / 1700	[illegible]
2		
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL2:

[illegible]JECT NUMBER 30449 0[illegible] PROJECT NAME: TYNDALL AFB

TYNDL6

#	SITE/STA HAZ	FRACTIONS(CIRCLE)	DATE	TIME	[illegible]
1	GT3-1	ED N O VP VP VP			
2	GT3-2	ED N O VP VP VP			
3	GT3-3	ED N O VP VP VP			
4	GT3-4	ED N O VP VP VP	[illegible]	[illegible]	5,3,9
5	GT3-5	ED N O VP VP VP			
6	GT3-6	ED N O VP VP VP			
7	GT3-7	ED N O VP VP VP			
8	GT3QA	ED N O VP VP VP			
9	GT9-1	ED N O VP VP VP			
10	GT9-2	ED N O VP VP VP			
11	GT9-3	ED N O VP VP VP			
12	GT9-4	ED N O VP VP VP			
13	GT9QA	ED N O VP VP VP			

TE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	YAR / ESE / 10/16/86 /	[illegible] ESE 10/17/86 15:00
2		
3		

HER FIELD NOTES FOR FIELD GROUP TYNDL6:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL6
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL6

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	GT3-1		ED N O VP VP VP			
*2	GT3-2		ED N O VP VP VP			
*3	GT3-3		ED N O VP VP VP			
*4	GT3-4		ED N O VP VP VP			
*5	GT3-5		ED N O VP VP VP	10/17	1145	2,3,9
*6	GT3-6		ED N O VP VP VP		1230	
*7	GT3-7		ED N O VP VP VP			
*8	GT3QA		ED N O VP VP VP	10/17	1145	
*9	GT9-1		ED N O VP VP VP			
*10	GT9-2		ED N O VP VP VP			
*11	GT9-3		ED N O VP VP VP			
*12	GT9-4		ED N O VP VP VP			
*13	GT9QA		ED N O VP VP VP			

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	[illegible]	[illegible]
2		
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL6:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL5

PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL5

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	GT7-1		N VP VP VP W			ZONE 7,8
*2	GT7-2		N VP VP VP W			ZONE 7,8
*3	GT7-3		N VP VP VP W			ZONE 7,8
*4	GT7-QA		N VP VP VP W			ZONE 7,8
*5	GT8-1		N VP VP VP W			ZONE 7,8
*6	GT8-3		N VP VP VP W	10/17	1355	ZONE 7,8
*7	GT8-4		N VP VP VP W			ZONE 7,8
*8	GT8QA		N VP VP VP W	10/17	1355	ZONE 7,8
*9	BWT7-11		N VP VP VP W			ZONE 7,8

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME
1	PAR / ESE / 10/17/86 / 1600	[illegible] ESE 10/18/86 13:
2		
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL5:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL5
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE
TYNDL5

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	GT7-1		N VP VP VP W			ZONE 7,8
*2	GT7-2		N VP VP VP W			ZONE 7,8
*3	GT7-3		N VP VP VP W			ZONE 7,8
*4	GT7-QA		N VP VP VP W			ZONE 7,8
*5	GT8-1		N VP VP VP W	10/16	1130	ZONE 7,8
*6	GT8-3		N VP VP VP W			ZONE 7,8
*7	GT8-4		N VP VP VP W			ZONE 7,8
*8	GT8QA		N VP VP VP W			ZONE 7,8
*9	BWT7-11		N VP VP VP W			ZONE 7,8

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1 JAR/ESE / 10/16/86	[illegible] / ESE 10/17/86 1510
2	
3	

OTHER FIELD NOTES FOR FIELD GROUP TYNDL5:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL4

PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

ESE #	SITE/STA	HAZ?	TYNDL4 ~~FRACTIONS(CIRCLE)~~	DATE	TIME	PARAMETER LIST
*1	GT6-1		NO O VP VP VP W	10/16	1455	Z 6,10,11
*2	GT6-2		N O VP VP VP W		1500	Z 6,10,11
*3	GT6-3		N O VP VP VP W		1505	Z 6,10,11
*4	GT6-4		N O VP VP VP W			Z 6,10,11
*5	GT6-5		N O VP VP VP W			Z 6,10,11
*6	GT6QA		N O VP VP VP W			Z 6,10,11
*7	GT10-1		N O VP VP VP W			Z 6,10,11
*8	GT10-2		N O VP VP VP W			Z 6,10,11
*9	GT10-3		N O VP VP VP W			Z 6,10,11
*10	GT10QA		N O VP VP VP W			Z 6,10,11
*11	GT11-1		N O VP VP VP W			Z 6,10,11
*12	GT11-2		N O VP VP VP W			Z 6,10,11
*13	GT11-3		N O VP VP VP W			Z 6,10,11
*14	SWT11-1		N O VP VP VP W			Z 6,10,11
*15	SWT11-2		N O VP VP VP W			Z 6,10,11

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	[illegible] ESE / 10/16/86	[illegible] ESE 10/17/86 [illegible]
2		
3		

... NAMES FOR FIELD GROUP TYNDL4:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL6
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE) TYNDL6	DATE	TIME	PARAMETER LIST
*1	GT3-1		ED N O VP VP VP			
*2	GT3-2		ED N O VP VP VP			
*3	GT3-3		ED N O VP VP VP			
*4	GT3-4		ED N O VP VP VP			
*5	GT3-5		ED N O VP VP VP			
*6	GT3-6		ED N O VP VP VP			
*7	GT3-7		ED N O VP VP VP			
*8	GT3QA		ED N O VP VP VP			
*9	GT9-1		ED N O VP VP VP	10/13/86	14:10	Z 3,9
*10	GT9-2		ED N O VP VP VP		14:44	
*11	GT9-3		ED N O VP VP VP			
*12	GT9-4		ED N O VP VP VP			
*13	GT9QA		ED N O VP VP VP			

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIM
1	TAH / ESE / 10/13/86 1548	D Hale / ESE / 10/14 / 1115
2		
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL6:

relog under list Z 3,9

P-10

ENVIRONMENTAL SCIENCE & ENGINEERING 10-02-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDLS

PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDLS

E #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	SOTEP1		SS	10/15/86	1400	EPMP
*2	SOTEP2		SS			EPMP
*3	SOTEP3		SS	10/15/86	1300	EPMP
*4	SOTEP4		SS			EPMP
*5	SOTEP5		SS			EPMP
*6	SOTEP6		SS			EPMP

OTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	Mark Jordan ESE 10/15 @ 1800 to	John Maxwell for transport to ESE Lab
2		
3		

THER FIELD NOTES FOR FIELD GROUP TYNDLS:

ACROSS/ LOGGED

SOTP-1 10/05/86 17:45

ENVIRONMENTAL SCIENCE & ENGINEERING 10-02-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDLS
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDLS

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
#1	SOTE 9-4		SS	10/5/86	1745	EPMP
#2	SOT 27-3		SS		1545	EPMP
#3	SOTEP3		SS			EPMP
#4	SOTEP4		SS			EPMP
#5	SOTEP5		SS			EPMP
#6	SOTEP6		SS			EPMP

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	WGE	D. Hale/ESE/10-9/1315
2		
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDLS:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL6
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE) TYNDL6	DATE	TIME	PARAMETER LIST
*1	GT3-1		ED N O VP VP VP			
*2	GT3-2		ED N O VP VP VP			
*3	GT3-3		ED N O VP VP VP			
*4	GT3-4		ED N O VP VP VP			
*5	GT3-5		ED N O VP VP VP			
*6	GT3-6		ED N O VP VP VP			
*7	GT3-7		ED N O VP VP VP	10/23	1220	
*8	GT3QA		ED N O VP VP VP			
*9	GT9-1		ED N O VP VP VP			
*10	GT9-2		ED N O VP VP VP			
*11	GT9-3		ED N O VP VP VP			
*12	GT9-4		ED N O VP VP VP			
*13	GT9QA		ED N O VP VP VP			

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	Maria Jordana ESE 10/24/86 @ 1600	[illegible] ESE [illegible]
2		
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL6:

Transported to ESE Lab by MJ.

P-13

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL5

PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL5

SEQ #	SITE/STA BASE	FRACTIONS(CIRCLE)	DATE	TIME	COMMENTS
*1	GT7-1	N VP VP VP W			ZONE 7,8
*2	GT7-2	N VP VP VP W			ZONE 7,8
*3	GT7-3	N VP VP VP W			ZONE 7,8
*4	GT7-QA	N VP VP VP W			ZONE 7,8
*5	GT8-1	N VP VP VP W			ZONE 7,8
*6	GT8-3	N VP VP VP W			ZONE 7,8
*7	GT8-4	N VP VP VP W	10/23	1030	ZONE 7,8
*8	GT8QA	N VP VP VP W			ZONE 7,8
*9	BWP7-11	N VP VP VP W			ZONE 7,8

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED, ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE [illegible]
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

P-14

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME) RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)

1 Mark Jordan ESE 10/24/86 @ 1600 [illegible] ESE [illegible]

3

OTHER FIELD NOTES FOR FIELD GROUP TYNDL5:

Transported to ESE Lab by MJ

ENVIRONMENTAL SCIENCE & ENGINEERING 10-06-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL7
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL7

ESE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	SDT11-1		SS SV			SZ 2,11
*2	SDT11-2		SS SV			SZ 2,11
*3	SDT2-1		SS SV			SZ 2,11

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	[illegible]	[illegible]
2		D. Hale / ESE / 10-15 / 1330
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL7:

NVIRONMENTAL SCIENCE & ENGINEERING 09 30 86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL5
ROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL5

#	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	GT7-1		N VP VP VP W	[illegible]	[illegible]	ZONE 7,8
*2	GT7-2		N VP VP VP W	[illegible]	12 30	ZONE 7,8
*3	GT7-3		N VP VP VP W			ZONE 7,8
*4	GT7-QA		N VP VP VP W			ZONE 7,8
*5	GT8-1		N VP VP VP W			ZONE 7,8
*6	GT8-3		N VP VP VP W			ZONE 7,8
*7	GT8-4		N VP VP VP W			ZONE 7,8
*8	GT8QA		N VP VP VP W			ZONE 7,8
*9	BWT7-1		N VP VP VP W	10/9/86	1450	ZONE 7,8

TE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	[illegible] ESE [illegible] 0730	[illegible]
2		[illegible] ESE 10/10/86 13:30
3		

HER FIELD NOTES FOR FIELD GROUP TYNDL5:

ONMENTAL SCIENCE & ENGINEERING 09-10-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL3
ECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DIENA HALE

TYNDL3

#	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
1	GT5-1		N VP VP VP W W	10/13/86	11:45	ZONE 5
2	GT5-2		N VP VP VP W W		11:35	ZONE 5
3	GT5-3		N VP VP VP W W*		12:00	ZONE 5
4	GT5QA		N VP VP VP W W		—	ZONE 5

OTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	JAR/ESE/10/13/86 1547	
2		
3		

THER FIELD NOTES FOR FIELD GROUP TYNDL3:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL3

PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL3

SE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
#1	GT5-1		N VP VP VP W W	10/13	11:40	ZONE 5
#2	GT5-2		N VP VP VP W W		11:35	ZONE 5
#3	GT5-3		N VP VP VP W W		12:00	ZONE 5
#4	GT5QA		N VP VP VP W W		—	ZONE 5

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	DAR / ESE / 10/13/86 1557	D Hale / ESE / 10-14 / 1115
2		
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL3:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDLS
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDLS

#	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
#1	GT7-1		N VP VP VP W	10/10/86	08:45	ZONE 7,8
#2	GT7-2		N VP VP VP W			ZONE 7,8
#3	GT7-3		N VP VP VP W	10/10/86	10:15	ZONE 7,8
#4	GT7-QA		N VP VP VP W	10/10/86	10:15	ZONE 7,8
#5	GT8-1		N VP VP VP W			ZONE 7,8
#6	GT8-3		N VP VP VP W			ZONE 7,8
#7	GT8-4		N VP VP VP W			ZONE 7,8
#8	GT8QA		N VP VP VP W			ZONE 7,8
#9	BWT7-11		N VP VP VP W			ZONE 7,8

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME
1	[illegible] ESE 10/10/86	Federal Express 10/10/86
2		[illegible] ESE 10/13/86 14:
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDLS:

ENVIRONMENTAL SCIENCE & ENGINEERING [illegible] *** FIELD LOGSHEET *** FIELD GROUP TYNDL4
PROJECT NUMBER [illegible] PROJECT NAME TYNDALL AFB [illegible]

TYNDL4

#	SITE STA HAZ	FRACTIONS (CIRCLE)	DATE	TIME	PARAMETERS LIST
*1	GT6-1	N O VP VP VP W			Z 6,10,11
*2	GT6-2	N O VP VP VP W			Z 6,10,11
*3	GT6-3	N O VP VP VP W			Z 6,10,11
*4	GT6-4	N O VP VP VP W			Z 6,10,11
*5	GT6-5	N O VP VP VP W			Z 6,10,11
*6	GT6QA	N O VP VP VP W			Z 6,10,11
*7	GT10-1	N O VP VP VP W	10/20	[illegible]	Z 6,10,11
*8	GT10-2	N O VP VP VP W	10/20	0940	Z 6,10,11
*9	GT10-3	N O VP VP VP W	10/20	[illegible]	Z 6,10,11
*10	GT10QA	N O VP VP VP W	10/20	0910	Z 6,10,11
*11	GT11-1	N O VP VP VP W	[illegible]	[illegible]	Z 6,10,11
*12	GT11-2	N O VP VP VP W	10/20	1045	Z 6,10,11
*13	GT11-3	N O VP VP VP W	10/20	1120	Z 6,10,11
*14	SWT11-1	N O VP VP VP W			Z 6,10,11
*15	SWT11-2	N O VP VP VP W			Z 6,10,11

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I=IGNITABLE C=CORROSIVE R=REACTIVE T=TOXIC H=OTHER NOTE WITH HAZARD IDENTITY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	[illegible] / ESE / 10/20/86 / 2000	[illegible] / ESE [illegible]
2		
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL4:

PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD: [illegible]

TYNDL4

SE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
*1	GT6-1		N O VP VP VP W			Z 6,10,11
*2	GT6-2		N O VP VP VP W			Z 6,10,11
*3	GT6-3		N O VP VP VP W			Z 6,10,11
*4	GT6-4		N O VP VP VP W	10/21	1200	Z 6,10,11
*5	GT6-5		N O VP VP VP W	10/21	1245	Z 6,10,11
*6	GT6QA		N O VP VP VP W			Z 6,10,11
*7	GT10-1		N O VP VP VP W			Z 6,10,11
*8	GT10-2		N O VP VP VP W			Z 6,10,11
*9	GT10-3		N O VP VP VP W			Z 6,10,11
*10	GT10QA		N O VP VP VP W			Z 6,10,11
*11	GT11-1		N O VP VP VP W			Z 6,10,11
*12	GT11-2		N O VP VP VP W			Z 6,10,11
*13	GT11-3		N O VP VP VP W			Z 6,10,11
*14	SWT11-1		N O VP VP VP W			Z 6,10,11
*15	SWT11-2		N O VP VP VP W			Z 6,10,11

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE, TIME, FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	Mark Jordan ESE 10/21/86 @ 1700	[illegible] Federal Express 10/21 1700
2		[illegible] /ESE 10/22/86 1213
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL4:

ENVIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL2
PROJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL2

SE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)						DATE	TIME	PARAMETER LIST
*1	GLH2-1		N	O	O	VP	VP	VP			ZONE2
*2	GLH2-2		N	O	O	VP	VP	VP			ZONE2
*3	GLH2-3		N	O	O	VP	VP	VP			ZONE2
*4	GLH2-4		N	O	O	VP	VP	VP			ZONE2
*5	GLH2-7		N	O	~~O~~	VP	VP	VP	10/22	1315	ZONE2
*6	GLH2QA		N	O	~~O~~	~~VP~~	~~VP~~	~~VP~~	10/22		ZONE2
*7	GLH2-8		N	O	~~O~~	VP	VP	VP	10/22	1230	ZONE2
*8	GLH2-9		N	O	~~O~~	VP	VP	VP	10/22	1110	ZONE2
*9	SWLH2		N	O	O	VP	VP	VP			ZONE2

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	Mark Jordana ESE 10/22/86 1630	[illegible] 10/22 21964
2		[illegible] ESE 10/23/86 14:00
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDL2:

VIRONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL6
OJECT NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL6

#	SITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
1	GT3-1		ED N O VP VP VP			
2	GT3-2		ED N O VP VP VP			
3	GT3-3		ED N O VP VP VP			
4	GT3-4		ED N O VP VP VP			
5	GT3-5		ED N O VP VP VP			
6	GT3-6		ED N O VP VP VP			
7	GT3-7		ED N O VP VP VP			
8	GT3QA		ED N O VP VP VP			
9	GT9-1		ED N O VP VP VP			
10	GT9-2		ED N O VP VP VP			
11	GT9-3		ED N O VP VP VP	10/21	1310	
12	GT9-4		ED N O VP VP VP	10/21	1215	
13	GT9QA		ED N O VP VP VP			

TE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	Mark Jordan ESE 10/21/86 @ 1700	FedEX 10/21 1700
2		/ ESE 10/22/86 14:30
3		

HER FIELD NOTES FOR FIELD GROUP TYNDL6:

ENVIRONMENTAL SCIENCE & ENGINEERING 10-02-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDLS
PROJECT NUMBER 86449 0000 ~~PROJECT NAME~~: TYNDALL AFB LAB COORD. DILNA HALE
TYNDL8 1 STF

SE #	SITE/STA	HAZ?	FRACTIONS(CIRCLE)				DATE	TIME	PARAMETER LIST		
*1	SOTEP1		SS						EPMP		
*2	NTF ~~SOTEP2~~ SOTN-2		SS	SS	SV	S✓	10/16	0840-0845	~~EPMP~~	SZ	2, 11
*3	NSP ~~SOTEP3~~ SOTN-3		SS	SS	SV	S✓	10/16	0915-0920	EPMP	SZ	2, 11
*4	SOTEP4		SS						EPMP		
*5	SOTEP5		SS						EPMP		
*6	SOTEP6		SS						EPMP		

NOTE -CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
-CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
-HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
-PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

	RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
1	[signature] ESE 10/16/86 1700	[signature] ESE 10/17/86 15:00
2		
3		

OTHER FIELD NOTES FOR FIELD GROUP TYNDLS:

MENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL6
NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALE

TYNDL6

ITE/STA	HAZ?	FRACTIONS(CIRCLE)	DATE	TIME	PARAMETER LIST
GT3-1		ED N O VP VP VP	1/15	1000	
GT3-2		ED N O VP VP VP		1110	2,3,9
GT3-3		ED N O VP VP VP		1125	
GT3-4		ED N O VP VP VP			
GT3-5		ED N O VP VP VP			
GT3-6		ED N O VP VP VP			
GT3-7		ED N O VP VP VP			
GT3QA		ED N O VP VP VP			
GT9-1		ED N O VP VP VP			
GT9-2		ED N O VP VP VP			
GT9-3		ED N O VP VP VP			
GT9-4		ED N O VP VP VP			
GT9QA		ED N O VP VP VP			

ANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
CLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
ZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD; IDENTIFY SPECIFICS IF KNOWN
EASE RETURN LOGSHEETS WITH SAMPLES TO ESE

INQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
/ ESE / 10/ / 1600	TRANSPORTED TO ESE BY
ESE	WENT TO COLD ROOM STORAGE

ELD NOTES FOR FIELD GROUP TYNDL6:

2: ... 31 PE
34: 66 PE
INACTIVE

ONMENTAL SCIENCE & ENGINEERING 09-30-86 *** FIELD LOGSHEET *** FIELD GROUP: TYNDL1
T NUMBER 86449 0000 PROJECT NAME: TYNDALL AFB LAB COORD. DILNA HALL

	SITE/STA	HAZ?	FRACTIONS(CIRCLE) TYNDL1	DATE	TIME	PARAMETER LIST
1	SOT11-1		√SS √SS SV SV	10/15	@ 15:15	
2	SOT11-2		SS SS SV SV			
3	SOT11-3		SS SS SV SV			SZ, 2, 11

CHANGE OR ENTER SITE ID AS NECESSARY; UP TO 9 ALPHANUMERIC CHARACTERS MAY BE USED
CIRCLE FRACTIONS COLLECTED. ENTER DATE,TIME,FIELD DATA (IF REQUIRED), HAZARD CODE AND NOTES
HAZARD CODES: I-IGNITABLE C-CORROSIVE R-REACTIVE T-TOXIC WASTE H-OTHER ACUTE HAZARD: IDENTIFY SPECIFICS IF KNOWN
PLEASE RETURN LOGSHEETS WITH SAMPLES TO ESE

RELINQUISHED BY: (NAME/ORGANIZATION/DATE/TIME)	RECEIVED BY (NAME/ORGANIZATION/DATE/TIME)
Jordana ESE /5 @ 1800	to John Maxwell to transport to ESE LAB
ESE 5/8	10/11/87 COLD Room Storage

OTHER FIELD NOTES FOR FIELD GROUP TYNDL1:

APPENDIX Q

LABORATORY QUALITY CONTROL DATA

FIELD GROUP
TYNDALL - 1

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
SAMPLE/BATCH REPORT FOR FIELD GROUP TYNDL1
DATE: Ø1 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL1*1	HYDROCARBONS, PETROL	34700
	LEAD, SED	34900
	MOISTURE	34428
	VOLATILE ORGANICS(GCMS)	34449
TYNDL1*2	HYDROCARBONS, PETROL	34700
	LEAD, SED	34900
	MOISTURE	34428
	VOLATILE ORGANICS(GCMS)	34449
TYNDL1*3	HYDROCARBONS, PETROL	34700
	LEAD, SED	35635
	MOISTURE	34428
	VOLATILE ORGANICS(GCMS)	34449

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL1
DATE: Ø1 MAR 1988

Replicate Analysis Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND	R.P.D.	MAX % REPL DIFF
LEAD,SED	UG/G-DRY	1052*GFAA	35635	RP*COESO2*1	22 JAN 87	782.9731	0.0	20
MOISTURE	%WET WT	70320*1	35635	RP*MXWLS*1	22 JAN 87	24.9	2.44	
			34428	RP*TYNDL1*3	21 OCT 86	6.2	6.67	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL1
DATE: Ø1 MAR 1988

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
HYDROCARBONS,PETROL	UG/G-DRY	98233*1	34700	SP1*NONE*1	13 NOV 86	8200.0	16.1	92.70	70.2 - 124.8	.8639		20.00
HYDROCARBONS,PETROL	UG/G-DRY	98233*1	34700	SP2*NONE*1	13 NOV 86	8200.0	16.5	95.40	70.2 - 124.8	.8639		20.00
LEAD,SED	UG/G-DRY	1052*GFAA	34900	SP1*NONE*1	25 NOV 86	0.05	10.8	103.00	80 - 120	.4583		20.00
				SP2*NONE*1		0.05	11.3	108.00	80 - 120	.4583	4.52	
			35635	SP1*NONE*1	22 JAN 87	0.05	6.16	120.00	80 - 120	.7519		
				SP2*NONE*1		0.05	6.63	130.00	80 - 120	.7519	7.35	
				SP2*NONE*2		0.05	6.13	120.00	80 - 120	.7519	0.49	
				SP3*NONE*2		0.05	5.61	110.00	80 - 120	.7519	9.35	

Sample Matrix Spike Recovery Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	UNSPIKED	R.P.D.	R.P.D. CRIT.
HYDROCARBONS, PETROL	UG/G-DRY	98233*1	34700	SPM*TYNDL1*2	13 NOV 86	8225.0	769	119.32	70.2 - 124.8	258		
LEAD, SED	UG/G-DRY	1052*GFAA	34900	SPM*TYNDL7*3	25 NOV 86	0.40	254	109.84	80 - 120	97.8		
			35635	SPM*TYNDL1*3	22 JAN 87	0.05	6.77	117.61	80 - 120	0.52		
				SPM1*TYNDL1*3		0.05	6.99	122.45	80 - 120	0.52	3.20	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL1
DATE: Ø1 MAR 1988

Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
HYDROCARBONS, PETROL	UG/G-DRY	98233*1	34700	MB*NONE*1	13 NOV 86	.8639
LEAD, SED	UG/G-DRY	1052*GFAA	34900	MB*NONE*1	25 NOV 86	.4583
			35635	MB1*NONE*1	22 JAN 87	.7519
				MB2*NONE*1		.6292
				MB1*NONE*2		.377

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FIELD GROUP
TYNDALL - 2

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL2
DATE: Ø1 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL2*1	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL2*2	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL2*3	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL2*4	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34553
TYNDL2*5	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL2*6	VOLATILE HALOCARBONS(601)	NA
	VOLATILE AROMATICS(602)	NA
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL2*7	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL2*8	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL2*9	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL2

Replicate Analysis Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND	R.P.D.	MAX % REPL DIFF
HYDROCARBONS, PETRO	MG/L	45501*1	34627	RP1*TYNDL6*10	06 NOV 86	.1642	30 90	20
HYDROCARBONS, PETRO	MG/L	45501*1	34627	RP2*TYNDL6*10	06 NOV 86	.1642	0.0	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL2
Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP2*NONE*666	21 OCT 86	0.20	0.17	86.00	55 - 131	0		31.00
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP3*NONE*666	21 OCT 86	0.20	0.21	107.00	55 - 131	0		31.00
				SP4*NONE*666		0.20	0.21	104.00	55 - 131	0	0.0	
				SP5*NONE*666		0.20	0.17	85.00	55 - 131	0	21.05	
				SP6*NONE*666		0.20	0.18	91.00	55 - 131	0	15.38	
1,1-DICHLOROETHANE	UG/L	34496*HA		SP1*NONE*666		0.20	0.17	84.00	57 - 121	0		30.00
				SP2*NONE*666		0.20	0.17	87.00	57 - 121	0	0.0	
				SP3*NONE*666		0.20	0.23	114.00	57 - 121	0	30.00	
				SP4*NONE*666		0.20	0.21	107.00	57 - 121	0	21.05	
				SP5*NONE*666		0.20	0.19	92.50	57 - 121	0	11.11	
				SP6*NONE*666		0.20	0.19	95.50	57 - 121	0	11.11	
1,2-DICHLOROETHANE	UG/L	34531*HA		SP1*NONE*666		0.20	0.17	82.50	63 - 135	0		27.00
				SP2*NONE*666		0.20	0.18	89.50	63 - 135	0	5.71	
				SP3*NONE*666		0.20	0.23	116.00	63 - 135	0	30.00	
				SP4*NONE*666		0.20	0.22	109.00	63 - 135	0	25.64	
				SP5*NONE*666		0.20	0.17	87.00	63 - 135	0	0.0	
				SP6*NONE*666		0.20	0.18	91.50	63 - 135	0	5.71	
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SP1*NONE*666		0.20	0.18	88.50	53 - 125	0		32.00
				SP2*NONE*666		0.20	0.18	88.00	53 - 125	0	0.0	
				SP3*NONE*666		0.20	0.22	109.00	53 - 125	0	20.00	
				SP4*NONE*666		0.20	0.23	115.00	53 - 125	0	24.39	
				SP5*NONE*666		0.20	0.18	90.00	53 - 125	0	0.0	
				SP6*NONE*666		0.20	0.20	101.00	53 - 125	0	10.53	
ETHYLBENZENE	UG/L	34371*PI		SP1*NONE*666		2.22	1.89	85.10	48 - 144	0		35.00
				SP2*NONE*666		2.22	1.89	85.10	48 - 144	0	0.0	
				SP3*NONE*666		2.52	2.53	100.00	48 - 144	0		
				SP4*NONE*666		2.52	2.37	94.00	48 - 144	0	6.53	
				SP5*NONE*666		2.22	1.87	84.20	48 - 144	0		
				SP6*NONE*666		2.22	1.80	81.10	48 - 144	0	3.81	
TOLUENE	UG/L	34010*PI		SP1*NONE*666		2.14	2.24	105.00	59 - 135	0		29.00
				SP2*NONE*666		2.14	2.24	105.00	59 - 135	0	0.0	
				SP3*NONE*666		2.44	2.49	102.00	59 - 135	0		
				SP4*NONE*666		2.44	2.25	92.20	59 - 135	0	10.13	
				SP5*NONE*666		2.14	1.71	79.90	59 - 135	0		
				SP6*NONE*666		2.14	1.74	81.30	59 - 135	0	1.74	
HYDROCARBONS, PETRO	MG/L	45501*I	34552	SP1*NONE*1	30 OCT 86	8200.0	3.66	87.20	70.2 - 124.8	.0758		20.00
				SP2*NONE*1		8200.0	3.71	88.50	70.2 - 124.8	.0758	1.36	
			34627	SP1*NONE*1	06 NOV 86	8200.0	4.26	101.00	70.2 - 124.8	.1055		
				SP2*NONE*1		8200.0	4.31	102.00	70.2 - 124.8	.1055	1.17	
LEAD, TOTAL	UG/L	1051*GFAA	34553	SP3*NONE*1	29 OCT 86	50.00	59.3	108.00	80 - 120	5.4589		20.00
			34894	SP1*NONE*1	25 NOV 86	50.00	57.1	103.00	80 - 120	3.3067		
				SP2*NONE*1		50.00	59.3	108.00	80 - 120	3.3067	3.78	
				SP3*NONE*1		50.00	58.2	105.00	80 - 120	3.3067	1.91	
				SP1*NONE*2		50.00	61.4	112.00	80 - 120	3.3067	7.26	
				SP2*NONE*2		50.00	63.6	116.00	80 - 120	3.3067	10.77	
				SP1*NONE*3		50.00	65.7	121.00	80 - 120	3.3067	14.01	
				SP3*NONE*3		50.00	59.3	108.00	80 - 120	3.3067	3.78	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL2

Sample Matrix Spike Recovery Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	UNSPIKED	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM2*TYNDL2*7	21 OCT 86	0.20	0.20	101.00	55 - 131	0.0		
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM1*TYNDL4*1	21 OCT 86	0.20	0.17	86.50	55 - 131	0.0		
				SPM3*TYNDL4*7		0.20	0.17	85.00	55 - 131	0.0		
1,1-DICHLOROETHANE	UG/L	34496*HA		SPM2*TYNDL2*7		0.20	0.20	100.50	57 - 121	0.0		
				SPM1*TYNDL4*1		0.20	0.19	93.00	57 - 121	0.0		
				SPM3*TYNDL4*7		0.20	0.17	85.00	57 - 121	0.0		
1,2-DICHLOROETHANE	UG/L	34531*HA		SPM2*TYNDL2*7		0.20	0.23	115.50	63 - 135	0.0		
				SPM1*TYNDL4*1		0.20	0.20	102.00	63 - 135	0.0		
				SPM3*TYNDL4*7		0.20	0.19	94.50	63 - 135	0.0		
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SPM2*TYNDL2*7		0.20	0.20	101.00	53 - 125	0.0		
				SPM1*TYNDL4*1		0.20	0.20	99.00	53 - 125	0.0		
				SPM3*TYNDL4*7		0.20	0.17	83.00	53 - 125	0.0		
ETHYLBENZENE	UG/L	34371*PI		SPM2*TYNDL2*7		2.52	2.80	111.11	48 - 144	0.0		
				SPM1*TYNDL4*1		2.22	2.28	102.70	48 - 144	0.0		
				SPM3*TYNDL4*7		2.22	2.05	92.34	48 - 144	0.0		
TOLUENE	UG/L	34010*PI		SPM2*TYNDL2*7		2.44	2.45	100.41	59 - 135	0.0		
				SPM1*TYNDL4*1		2.14	2.34	109.35	59 - 135	0.0		
				SPM3*TYNDL4*7		2.14	2.06	96.26	59 - 135	0.0		
HYDROCARBONS, PETRO	MG/L	45501*I	34552	SPM*TYNDL2*9	30 OCT 86	8225.0	5.21	22.16	70.2 - 124.8	4.20		
LEAD, TOTAL	UG/L	1051*GFAA	34894	SPM*NYPSC3*3	25 NOV 86	50.00	56.0	114.07	80 - 120	0		
				SPM*PPPE-3*3		100.00	126	114.15	80 - 120	11.8		
				SPM*SEMRF*2		50.00	51.7	105.46	80 - 120	0		
				SPM*TYNDL2*1		50.00	71.0	120.52	80 - 120	10.8		
				SPM*TYNDL4*1		50.00	66.7	133.44	80 - 120	.00002		
				SPM*TYNDL4*12		100.00	145	114.15	80 - 120	31.2		
				SPM*TYNDL4*4		50.00	72.1	131.28	80 - 120	6.46		
				SPM*TYNDL6*10		50.00	62.4	116.22	80 - 120	4.30		
				SPM*TYNDL6*12		100.00	132	96.93	80 - 120	35.5		
				SPM*TYNDL6*9		100.00	137	108.76	80 - 120	28.0		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL2

Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
BROMODICHLOROMETHANE	UG/L	32101*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOFORM	UG/L	32104*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOMETHANE	UG/L	34413*HA		MB*NONE*666		0
CARBON TETRACHLORIDE	UG/L	32102*HA		MB*NONE*666		0
CHLOROBENZENE	UG/L	34301*HA		MB*NONE*666		0
CHLOROETHANE	UG/L	34311*HA		MB*NONE*666		0
2-CHLOROETHYLVINYL ETHER	UG/L	34576*HA		MB*NONE*666		0
CHLOROFORM	UG/L	32106*HA		MB*NONE*666		0
CHLOROMETHANE	UG/L	34418*HA		MB*NONE*666		0
DIBROMOCHLOROMETHANE	UG/L	32105*HA		MB*NONE*666		0
DICHLOROBENZENE, TOT.	UG/L	81524*HA		MB*NONE*666		0
DICHLORODIFLUORO METHANE	UG/L	34668*HA		MB*NONE*666		0
1,1-DICHLOROETHANE	UG/L	34496*HA		MB*NONE*666		0
1,2-DICHLOROETHANE	UG/L	34531*HA		MB*NONE*666		0
1,1-DICHLOROETHYLENE	UG/L	34501*HA		MB*NONE*666		0
TRANS-1,2-DICHLORO ETHENE	UG/L	34546*HA		MB*NONE*666		0
1,2-DICHLOROPROPANE	UG/L	34541*HA		MB*NONE*666		0
CIS-1,3-DICHLORO PROPENE	UG/L	34704*HA		MB*NONE*666		0
TRANS-1,3-DICHLORO PROPENE	UG/L	34699*HA		MB*NONE*666		0
METHYLENE CHLORIDE	UG/L	34423*HA		MB*NONE*666		0
1,1,2,2-TETRACHLORO ETHANE	UG/L	34516*HA		MB*NONE*666		0
TETRACHLOROETHENE	UG/L	34475*HA		MB*NONE*666		0
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		MB*NONE*666		0
1,1,2-TRICHL'ETHANE	UG/L	34511*HA		MB*NONE*666		0
TRICHLOROETHENE	UG/L	39180*HA		MB*NONE*666		0
TRICHL'FLUOROMETHANE	UG/L	34488*HA		MB*NONE*666		0
VINYL CHLORIDE	UG/L	39175*HA		MB*NONE*666		0
BENZENE	UG/L	34030*PI		MB*NONE*666		0
ETHYLBENZENE	UG/L	34371*PI		MB*NONE*666		0
TOLUENE	UG/L	34010*PI		MB*NONE*666		0
HYDROCARBONS, PETRO	MG/L	45501*I	34552	MB*NONE*I	30 OCT 86	.0758
			34627	MB*NONE*I	06 NOV 86	.1055
LEAD, TOTAL	UG/L	1051*GFAA	34553	MB2*NONE*1	29 OCT 86	5.4589
			34894	MB1*NONE*1	25 NOV 86	3.3067
				MB1*NONE*2		4.3828
				MB2*NONE*3		5.4589

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FIELD GROUP
TYNDALL - 3

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL3

DATE: 02 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL3*1	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	PHENOLS (GC-604)	34367
	ICAP METALS	35477
	MERCURY	34563
TYNDL3*2	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	PHENOLS (GC-604)	34367
	ICAP METALS	35477
	MERCURY	34563
TYNDL3*3	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	PHENOLS (GC-604)	34367
	ICAP METALS	35477
	MERCURY	34563
TYNDL3*4	VOLATILE HALOCARBONS(601)	34825
	VOLATILE AROMATICS(602)	34825
	PHENOLS (GC-604)	34367
	ICAP METALS	NA
	MERCURY	NA

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD FROUP TYNDL3
Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP2*NONE*666	21 OCT 86	0.20	0.17	86.00	55 - 131	0		31.00
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP3*NONE*666	21 OCT 86	0.20	0.21	107.00	55 - 131	0		31.00
				SP4*NONE*666		0.20	0.21	104.00	55 131	0	0.0	
				SP5*NONE*666		0.20	0.17	85.00	55 - 131	0	21.05	
				SP6*NONE*666		0.20	0.18	91.00	55 - 131	0	15.38	
1,1-DICHLOROETHANE	UG/L	34496*HA		SP1*NONE*666		0.20	0.17	84.00	57 121	0		30.00
				SP2*NONE*666		0.20	0.17	87.00	57 - 121	0	0.0	
				SP3*NONE*666		0.20	0.23	114.00	57 - 121	0	30.00	
				SP4*NONE*666		0.20	0.21	107.00	57 121	0	21.05	
				SP5*NONE*666		0.20	0.19	92.50	57 121	0	11.11	
				SP6*NONE*666		0.20	0.19	95.50	57 - 121	0	11.11	
1,2-DICHLOROETHANE	UG/L	34531*HA		SP1*NONE*666		0.20	0.17	82.50	63 - 135	0		27.00
				SP2*NONE*666		0.20	0.18	89.50	63 - 135	0	5.71	
				SP3*NONE*666		0.20	0.23	116.00	63 - 135	0	30.00	
				SP4*NONE*666		0.20	0.22	109.00	63 135	0	25.64	
				SP5*NONE*666		0.20	0.17	87.00	63 135	0	0.0	
				SP6*NONE*666		0.20	0.18	91.50	63 - 135	0	5.71	
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SP1*NONE*666		0.20	0.18	88.50	53 - 125	0		32.00
				SP2*NONE*666		0.20	0.18	88.00	53 - 125	0	0.0	
				SP3*NONE*666		0.20	0.22	109.00	53 125	0	20.00	
				SP4*NONE*666		0.20	0.23	115.00	53 125	0	24.39	
				SP5*NONE*666		0.20	0.18	90.00	53 125	0	0.0	
				SP6*NONE*666		0.20	0.20	101.00	53 - 125	0	10.53	
ETHYLBENZENE	UG/L	34371*PI		SP1*NONE*666		2.22	1.89	85.10	48 144	0		35.00
				SP2*NONE*666		2.22	1.89	85.10	48 144	0	0.0	
				SP3*NONE*666		2.52	2.53	100.00	48 144	0		
				SP4*NONE*666		2.52	2.37	94.00	48 144	0	6.53	
				SP5*NONE*666		2.22	1.87	84.20	48 144	0		
				SP6*NONE*666		2.22	1.80	81.10	48 - 144	0	3.81	
TOLUENE	UG/L	34010*PI		SP1*NONE*666		2.14	2.24	105.00	59 - 135	0		29.00
				SP2*NONE*666		2.14	2.24	105.00	59 - 135	0	0.0	
				SP3*NONE*666		2.44	2.49	102.00	59 - 135	0		
				SP4*NONE*666		2.44	2.25	92.20	59 - 135	0	10.13	
				SP5*NONE*666		2.14	1.71	79.90	59 - 135	0		
				SP6*NONE*666		2.14	1.74	81.30	59 - 135	0	1.74	
4-CHL'-3-METH'PHENOL	UG/L	34452*FI	34367	SP1*NONE*1	20 OCT 86	34.41	33	95.00	39 - 101	0		41.00
2-CHLOROPHENOL	UG/L	34586*FI		SP1*NONE*1		30.17	25	83.00	74.9 - 115.1	0		0.0
2,4-DICHLOROPHENOL	UG/L	34601*FI		SP1*NONE*1		25.94	24	94.00	74.9 - 115.1	0		0.0
2,4-DIMETHYLPHENOL	UG/L	34606*FI		SP1*NONE*1		22.84	21	90.00	85 - 115	0		0.0
2,4-DINITROPHENOL	UG/L	34616*FI		SP1*NONE*1		7.33	5.1	69.00	28 - 128	0		53.00
2-METHYL-4,6-DINITROPHENOL	UG/L	34657*FI		SP1*NONE*1		6.66	6.1	91.00	75 - 115	0		0.0
2-NITROPHENOL	UG/L	34591*FI		SP1*NONE*1		8.83	8.0	90.00	85 - 115	0		0.0
4-NITROPHENOL	UG/L	34646*FI		SP1*NONE*1		12.47	7.1	57.00	85 - 115	0		0.0
PENTACHLOROPHENOL	UG/L	39032*FI		SP1*NONE*1		22.19	18	79.00	48 - 122	0		34.00
PHENOL	UG/L	34694*FI		SP1*NONE*1		65.84	35.8	48.30	33 - 97	3.9265		47.00
2,4,6-TRICHL'PHENOL	UG/L	34621*FI		SP1*NONE*1		35.91	32	88.00	80 - 120	0		20.00
ARSENIC, TOTAL	UG/L	1002*ICAP	35477	SP1*NONE*1	14 JAN 87	1000.0	1020	102.00	80 - 120	0		20.00
				SP2*NONE*1		1000.0	1040	104.00	80 - 120	0	1.94	
				SP3*NONE*1		1000.0	1030	103.00	80 - 120	0	0.98	
ANTIMONY, TOTAL	UG/L	1097*ICAP	36268	SP1*NONE*1	23 NOV 86	500.00	487	97.40	80 - 120	0		20.00
				SP2*NONE*1		500.00	504	101.00	80 - 120	0	3.43	
				SP3*NONE*1		500.00	500	99.90	80 - 120	0	2.63	
				SP4*NONE*1		500.00	501	100.00	80 - 120	0	2.83	
BERYLLIUM, TOTAL	UG/L	1012*ICAP	35477	SP1*NONE*1	14 JAN 87	50.00	46.4	92.20	85 - 115	.28		15.00
				SP2*NONE*1		50.00	50.3	100.00	85 - 115	.28	8.07	
				SP3*NONE*1		50.00	51.8	103.00	85 - 115	.28	11.00	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD FROUP TYNDL3
Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
CADMIUM, TOTAL	UG/L	1027*ICAP	36268	SP1*NONE*1	23 NOV 86	50.00	51.8	101.00	85 - 115	1.08		15.00
				SP2*NONE*1		50.00	52.4	103.00	85 - 115	1.08	1.15	
				SP3*NONE*1		50.00	52.5	103.00	85 - 115	1.08	1.34	
				SP4*NONE*1		50.00	53.5	105.00	85 - 115	1.08	3.23	
CHROMIUM, TOTAL	UG/L	1034*ICAP		SP1*NONE*1		200.00	198	99.20	80 - 120	0		20.00
				SP2*NONE*1		200.00	204	102.00	80 - 120	0	2.99	
				SP3*NONE*1		200.00	201	100.00	80 - 120	0	1.50	
				SP4*NONE*1		200.00	206	103.00	80 - 120	0	3.96	
COPPER, TOTAL	UG/L	1042*ICAP		SP1*NONE*1		250.00	247	98.60	85 - 115	0		15.00
				SP2*NONE*1		250.00	249	99.50	85 - 115	0	0.81	
				SP3*NONE*1		250.00	248	99.30	85 - 115	0	0.40	
				SP4*NONE*1		250.00	253	101.00	85 - 115	0	2.40	
LEAD, TOTAL	UG/L	1051*ICAP		SP1*NONE*1		500.00	521	104.00	80 - 120	0		20.00
				SP2*NONE*1		500.00	531	106.00	80 - 120	0	1.90	
				SP3*NONE*1		500.00	544	109.00	80 - 120	0	4.32	
				SP4*NONE*1		500.00	549	110.00	80 - 120	0	5.23	
NICKEL, TOTAL	UG/L	1067*ICAP		SP1*NONE*1		500.00	524	103.00	80 - 120	9.73		20.00
				SP2*NONE*1		500.00	546	107.00	80 - 120	9.73	4.11	
				SP3*NONE*1		500.00	526	103.00	80 - 120	9.73	0.38	
				SP4*NONE*1		500.00	542	107.00	80 - 120	9.73	3.38	
SILVER, TOTAL	UG/L	1077*ICAP		SP1*NONE*1		100.00	99.2	98.50	70 - 110	.67		20.00
				SP2*NONE*1		100.00	101	100.00	70 - 110	.67	1.80	
				SP3*NONE*1		100.00	101	101.00	70 - 110	.67	1.80	
				SP4*NONE*1		100.00	107	106.00	70 - 110	.67	7.57	
SELENIUM, TOTAL	UG/L	1147*ICAP		SP1*NONE*1		1000.0	1060	103.00	80 - 120	26.46		20.00
				SP2*NONE*1		1000.0	1080	105.00	80 - 120	26.46	1.87	
				SP3*NONE*1		1000.0	1060	103.00	80 - 120	26.46	0.0	
				SP4*NONE*1		1000.0	1060	104.00	80 - 120	26.46	0.0	
THALLIUM, TOTAL	UG/L	1059*ICAP		SP1*NONE*1		10000	9790	97.90	80 - 120	0		20.00
				SP2*NONE*1		10000	9810	98.10	80 - 120	0	0.20	
				SP3*NONE*1		10000	9780	97.80	80 - 120	0	0.10	
				SP4*NONE*1		10000	10200	102.00	80 - 120	0	4.10	
ZINC, TOTAL	UG/L	1092*ICAP		SP1*NONE*1		500.00	519	102.00	85 - 115	6.67		15.00
				SP2*NONE*1		500.00	535	106.00	85 - 115	6.67	3.04	
				SP3*NONE*1		500.00	539	106.00	85 - 115	6.67	3.78	
				SP4*NONE*1		500.00	548	108.00	85 - 115	6.67	5.44	
MERCURY, TOTAL	UG/L	71900*CVAA	34583	SP2*NONE*2	30 OCT 86	5.00	4.86	97.20	80 - 120	.3456		20.00
				SP3*NONE*2		5.00	4.79	95.90	80 - 120	.3456	1.45	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD FROUP TYNDL3
Sample Matrix Spike Recovery Summary

NAME	UNITS	STORET METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	UNSPIKED	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM2*TYNDL2*7	21 OCT 86	0.20	0.20	101.00	55 - 131	[illegible]		
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM1*TYNDL4*1	21 OCT 86	0.20	0.17	86.50	55 - 131	0.0		
				SPM3*TYNDL4*7		0.20	0.17	85.00	55 - 131	0.0		
1,1-DICHLOROETHANE	UG/L	34496*HA		SPM2*TYNDL2*7		0.20	0.20	100.50	57 - 121	0.0		
				SPM1*TYNDL4*1		0.20	0.19	93.00	57 - 121	0.0		
				SPM3*TYNDL4*7		0.20	0.17	85.00	57 - 121	0.0		
1,2-DICHLOROETHANE	UG/L	34531*HA		SPM2*TYNDL2*7		0.20	0.23	115.50	63 - 135	0.0		
				SPM1*TYNDL4*1		0.20	0.20	102.00	63 - 135	0.0		
				SPM3*TYNDL4*7		0.20	0.19	94.50	63 - 135	0.0		
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SPM2*TYNDL2*7		0.20	0.20	101.00	53 - 125	0.0		
				SPM1*TYNDL4*1		0.20	0.20	99.00	53 - 125	0.0		
				SPM3*TYNDL4*7		0.20	0.17	83.00	53 - 125	0.0		
ETHYLBENZENE	UG/L	34371*PI		SPM2*TYNDL2*7		2.52	2.80	111.11	48 - 144	0.0		
				SPM1*TYNDL4*1		2.22	2.28	102.70	48 - 144	0.0		
				SPM3*TYNDL4*7		2.22	2.05	92.34	48 - 144	0.0		
TOLUENE	UG/L	34010*PI		SPM2*TYNDL2*7		2.44	2.45	100.41	59 - 135	0.0		
				SPM1*TYNDL4*1		2.14	2.34	109.35	59 - 135	0.0		
				SPM3*TYNDL4*7		2.14	2.06	96.26	59 - 135	0.0		
4-CHL'-3-METH'PHENOL	UG/L	34452*FI	34367	SPM*TYNDL3*1	20 OCT 86	34.41	35	99.81	39 - 101	0.38		
2-CHLOROPHENOL	UG/L	34[illegible]*FI		SPM*TYNDL3*1		30.17	25	83.97	74.9 - 115.1	0.06		
2,4-DICHLOROPHENOL	UG/L	34601*FI		SPM*TYNDL3*1		25.94	25	97.08	74.9 - 115.1	0.23		
2,4-DIMETHYLPHENOL	UG/L	34606*FI		SPM*TYNDL3*1		22.84	19	84.07	85 - 115	0.14		
2,4-DINITROPHENOL	UG/L	34616*FI		SPM*TYNDL3*1		7.33	9.7	125.00	28 - 128	0.55		
2-METHYL-4,6-DINITROPHENOL	UG/L	34657*FI		SPM*TYNDL3*1		6.66	7.3	96.89	75 - 115	0.84		
2-NITROPHENOL	UG/L	34591*FI		SPM*TYNDL3*1		8.83	8.5	93.00	85 - 115	0.32		
4-NITROPHENOL	UG/L	34646*FI		SPM*TYNDL3*1		12.47	7.5	51.59	85 - 115	1.1		
PENTACHLOROPHENOL	UG/L	39032*FI		SPM*TYNDL3*1		22.19	23	98.92	48 - 122	0.55		
PHENOL	UG/L	34694*FI		SPM*TYNDL3*1		65.84	-3110	52.36	33 - 97	0		
2,4,6-TRICHL'PHENOL	UG/L	34621*FI		SPM*TYNDL3*1		35.91	34	93.89	80 - 120	0.20		
ARSENIC, TOTAL	UG/L	1002*ICAP	35477	SPM*TYNDL3*1	14 JAN 87	1000.0	1110	102.71	80 - 120	86.4		
				SPM*TYNDL3*3		963.36	1230	107.03	80 - 120	203		
				SPM*TYNDL5*1		1000.0	1000	99.71	80 - 120	5.06		
				SPM*TYNDL5*4		963.36	1030	105.83	80 - 120	6.00		
ANTIMONY, TOTAL	UG/L	1097*ICAP	36268	SPM*TYNDL5*9	23 NOV 86	500.00	515	103.01	80 120	0.0		
BERYLLIUM, TOTAL	UG/L	1012*ICAP	35477	SPM*TYNDL3*1	14 JAN 87	50.00	44.3	61.42	85 - 115	13.6		
				SPM*TYNDL3*3		853.68	956	111.96	85 - 115	0		
				SPM*TYNDL5*1		50.00	52.0	87.20	85 - 115	8.37		
				SPM*TYNDL5*4		853.68	935	109.52	85 - 115	0		
CADMIUM, TOTAL	UG/L	1027*ICAP	36268	SPM*TYNDL5*9	23 NOV 86	50.00	52.9	105.70	85 - 115	0.0		
CHROMIUM, TOTAL	UG/L	1034*ICAP		SPM*TYNDL5*9		200.00	200	99.75	80 - 120	0.03		
COPPER, TOTAL	UG/L	1042*ICAP		SPM*TYNDL5*9		250.00	251	99.76	85 - 115	1.12		
LEAD, TOTAL	UG/L	1051*ICAP		SPM*TYNDL5*9		500.00	535	107.06	80 - 120	0.0		
NICKEL, TOTAL	UG/L	1067*ICAP		SPM*TYNDL5*9		500.00	544	106.80	80 - 120	10.3		
SILVER, TOTAL	UG/L	1077*ICAP		SPM*TYNDL5*9		100.00	105	102.86	70 - 110	2.17		
SELENIUM, TOTAL	UG/L	1147*ICAP		SPM*TYNDL5*9		1000.0	1110	106.20	80 - 120	43.3		
THALLIUM, TOTAL	UG/L	1059*ICAP		SPM*TYNDL5*9		10000	9860	97.98	80 - 120	61.6		
ZINC, TOTAL	UG/L	1092*ICAP		SPM*TYNDL5*9		500.00	541	106.13	85 - 115	10.1		
MERCURY, TOTAL	UG/L	71900*CVAA	34583	SPM*NYPSC4*1	30 OCT 86	5.00	4.52	95.78	80 - 120	0		
				SPM*PAN SW*1		5.00	5.27	109.47	80 - 120	0		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD FROUP TYNDL3

Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
BROMODICHLOROMETHANE	UG/L	32101*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOFORM	UG/L	32104*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOMETHANE	UG/L	34413*HA		MB*NONE*666		0
CARBON TETRACHLORIDE	UG/L	32102*HA		MB*NONE*666		0
CHLOROBENZENE	UG/L	34301*HA		MB*NONE*666		0
CHLOROETHANE	UG/L	34311*HA		MB*NONE*666		0
2-CHLOROETHYLVINYL ETHER	UG/L	34576*HA		MB*NONE*666		0
CHLOROFORM	UG/L	32106*HA		MB*NONE*666		0
CHLOROMETHANE	UG/L	34418*HA		MB*NONE*666		0
DIBROMOCHLOROMETHANE	UG/L	32105*HA		MB*NONE*666		0
DICHLOROBENZENE, TOT.	UG/L	81524*HA		MB*NONE*666		0
DICHLORODIFLUORO METHANE	UG/L	34668*HA		MB*NONE*666		0
1,1-DICHLOROETHANE	UG/L	34496*HA		MB*NONE*666		0
1,2-DICHLOROETHANE	UG/L	34531*HA		MB*NONE*666		0
1,1-DICHLOROETHYLENE	UG/L	34501*HA		MB*NONE*666		0
TRANS-1,2-DICHLORO ETHENE	UG/L	34546*HA		MB*NONE*666		0
1,2-DICHLOROPROPANE	UG/L	34541*HA		MB*NONE*666		0
CIS-1,3-DICHLORO PROPENE	UG/L	34704*HA		MB*NONE*666		0
TRANS-1,3-DICHLORO PROPENE	UG/L	34699*HA		MB*NONE*666		0
METHYLENE CHLORIDE	UG/L	34423*HA		MB*NONE*666		0
1,1,2,2 TETRACHLORO ETHANE	UG/L	34516*HA		MB*NONE*666		0
TETRACHLOROETHENE	UG/L	34475*HA		MB*NONE*666		0
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		MB*NONE*666		0
1,1,2-TRICHL'ETHANE	UG/L	34511*HA		MB*NONE*666		0
TRICHLOROETHENE	UG/L	39180*HA		MB*NONE*666		0
TRICHL'FLUOROMETHANE	UG/L	34488*HA		MB*NONE*666		0
VINYL CHLORIDE	UG/L	39175*HA		MB*NONE*666		0
BENZENE	UG/L	34030*PI		MB*NONE*666		0
ETHYLBENZENE	UG/L	34371*PI		MB*NONE*666		0
TOLUENE	UG/L	34010*PI		MB*NONE*666		0
4-CHL'-3-METH'PHENOL	UG/L	34452*FI	34367	MB*NONE*1	20 OCT 86	0
2-CHLOROPHENOL	UG/L	34586*FI		MB*NONE*1		0
2,4-DICHLOROPHENOL	UG/L	34601*FI		MB*NONE*1		0
2,4-DIMETHYLPHENOL	UG/L	34606*FI		MB*NONE*1		0
2,4-DINITROPHENOL	UG/L	34616*FI		MB*NONE*1		0
2-METHYL-4,6-DINITROPHENOL	UG/L	34657*FI		MB*NONE*1		0
2-NITROPHENOL	UG/L	34591*FI		MB*NONE*1		0
4-NITROPHENOL	UG/L	34646*FI		MB*NONE*1		0
PENTACHLOROPHENOL	UG/L	39032*FI		MB*NONE*1		0
PHENOL	UG/L	34694*FI		MB*NONE*1		3.9265
2,4,6-TRICHL'PHENOL	UG/L	34621*FI		MB*NONE*1		0
ARSENIC, TOTAL	UG/L	1002*ICAP	35477	MB*NONE*1	14 JAN 87	0
				MB*NONE*2		2.78
ANTIMONY, TOTAL	UG/L	1097*ICAP	36268	MB*NONE*1	23 NOV 86	0
				MB*NONE*2		0
BERYLLIUM, TOTAL	UG/L	1012*ICAP	35477	MB*NONE*1	14 JAN 87	.28
				MB*NONE*2		0
CADMIUM, TOTAL	UG/L	1027*ICAP	36268	MB*NONE*1	23 NOV 86	1.08
				MB*NONE*2		.86
CHROMIUM, TOTAL	UG/L	1034*ICAP		MB*NONE*1		0
				MB*NONE*2		0
COPPER, TOTAL	UG/L	1042*ICAP		MB*NONE*1		0
				MB*NONE*2		0
LEAD, TOTAL	UG/L	1051*ICAP		MB*NONE*1		0
				MB*NONE*2		20.57
NICKEL, TOTAL	UG/L	1067*ICAP		MB*NONE*1		9.73

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD FROUP TYNDL3
Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
				MB*NONE*2		0
SILVER, TOTAL	UG/L	1077*ICAP		MB*NONE*1		.67
				MB*NONE*2		.16
SELENIUM, TOTAL	UG/L	1147*ICAP		MB*NONE*1		26.46
				MB*NONE*2		41.15
THALLIUM, TOTAL	UG/L	1059*ICAP		MB*NONE*1		0
				MB*NONE*2		0
ZINC, TOTAL	UG/L	1092*ICAP		MB*NONE*1		6.67
				MB*NONE*2		14.75
MERCURY, TOTAL	UG/L	71900*C..A	34583	MB1*NONE*1	30 OCT 86	.3456
				MB2*NONE*2		.1403

FIELD GROUP
TYNDALL - 4

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL4
DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL4*1	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL4*2	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL4*3	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL4*4	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL4*5	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL4*6	VOLATILE AROMATICS(602)	NA
	VOLATILE HALOCARBONS(601)	NA
	PHENOLS (GC-604)	NA
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL4*7	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL4*8	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL4*9	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL4*10	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL4*11	VOLATILE AROMATICS(602)	34825

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL4
DATE: Ø1 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL4*11	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL4*12	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL4*13	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35897
	HYDROCARBONS, PETRO	34627
	LEAD, TOTAL	34894
TYNDL4*14	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894
TYNDL4*15	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	PHENOLS (GC-604)	35241
	HYDROCARBONS, PETRO	34552
	LEAD, TOTAL	34894

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL4

Replicate Analysis Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND	R.P.D.	MAX % REPL DIFF
HYDROCARBONS, PETRO	MG/L	45501*1	34627	RP1*TYNDL6*10	06 NOV 86	.1642	30.90	20
HYDROCARBONS, PETRO	MG/L	45501*1	34627	RP2*TYNDL6*10	06 NOV 86	.1642	0.0	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL4
Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP2*NONE*666	21 OCT 86	0.20	0.17	86.00	55 - 131	0		31.00
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP3*NONE*666	21 OCT 86	0.20	0.21	107.00	55 - 131	0		31.00
				SP4*NONE*666		0.20	0.21	104.00	55 - 131	0	0.0	
				SP5*NONE*666		0.20	0.17	85.00	55 - 131	0	21.05	
				SP6*NONE*666		0.20	0.18	91.00	55 - 131	0	15.38	
1,1-DICHLOROETHANE	UG/L	34496*HA		SP1*NONE*666		0.20	0.17	84.00	57 - 121	0		30.00
				SP2*NONE*666		0.20	0.17	87.00	57 - 121	0	0.0	
				SP3*NONE*666		0.20	0.23	114.00	57 - 121	0	30.00	
				SP4*NONE*666		0.20	0.21	107.00	57 - 121	0	21.05	
				SP5*NONE*666		0.20	0.19	92.50	57 - 121	0	11.11	
				SP6*NONE*666		0.20	0.19	95.50	57 - 121	0	11.11	
1,2-DICHLOROETHANE	UG/L	34531*HA		SP1*NONE*666		0.20	0.17	82.50	63 - 135	0		27.00
				SP2*NONE*666		0.20	0.18	89.50	63 - 135	0	5.71	
				SP3*NONE*666		0.20	0.23	116.00	63 - 135	0	30.00	
				SP4*NONE*666		0.20	0.22	109.00	63 - 135	0	25.64	
				SP5*NONE*666		0.20	0.17	87.00	63 - 135	0	0.0	
				SP6*NONE*666		0.20	0.18	91.50	63 - 135	0	5.71	
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SP1*NONE*666		0.20	0.18	88.50	53 - 125	0		32.00
				SP2*NONE*666		0.20	0.18	88.00	53 - 125	0	0.0	
				SP3*NONE*666		0.20	0.22	109.00	53 - 125	0	20.00	
				SP4*NONE*666		0.20	0.23	115.00	53 - 125	0	24.39	
				SP5*NONE*666		0.20	0.18	90.00	53 - 125	0	0.0	
				SP6*NONE*666		0.20	0.20	101.00	53 - 125	0	10.53	
ETHYLBENZENE	UG/L	34371*PI		SP1*NONE*666		2.22	1.89	85.10	48 - 144	0		35.00
				SP2*NONE*666		2.22	1.89	85.10	48 - 144	0	0.0	
				SP3*NONE*666		2.52	2.53	100.00	48 - 144	0		
				SP4*NONE*666		2.52	2.37	94.00	48 - 144	0	6.53	
				SP5*NONE*666		2.22	1.87	84.20	48 - 144	0		
				SP6*NONE*666		2.22	1.80	81.10	48 - 144	0	3.81	
TOLUENE	UG/L	34010*PI		SP1*NONE*666		2.14	2.24	105.00	59 - 135	0		29.00
				SP2*NONE*666		2.14	2.24	105.00	59 - 135	0	0.0	
				SP3*NONE*666		2.44	2.49	102.00	59 - 135	0		
				SP4*NONE*666		2.44	2.25	92.20	59 - 135	0	10.13	
				SP5*NONE*666		2.14	1.71	79.90	59 - 135	0		
				SP6*NONE*666		2.14	1.74	81.30	59 - 135	0	1.74	
4-CHL'-3-METH'PHENOL	UG/L	34452*FI	35241	SP1*NONE*1	04 NOV 86	34.41	23	67.00	39 - 101	0		41.00
				SP2*NONE*1		34.41	21	60.00	39 - 101	0	9.09	
			35897	SP1*NONE*1	06 NOV 86	34.41	13	37.00	39 - 101	0		
				SP2*NONE*1		34.41	19	56.00	39 - 101	0	37.50	
2-CHLOROPHENOL	UG/L	34586*FI	35241	SP1*NONE*1	04 NOV 86	30.17	16	53.00	74.9 - 115.1	0		0.0
				SP2*NONE*1		30.17	16	54.00	74.9 - 115.1	0	0.0	
			35897	SP1*NONE*1	06 NOV 86	30.17	11	35.00	74.9 - 115.1	0		
				SP2*NONE*1		30.17	17	56.00	74.9 - 115.1	0	42.86	
2,4-DICHLOROPHENOL	UG/L	34601*FI	35241	SP1*NONE*1	04 NOV 86	25.94	15	60.00	74.9 - 115.1	0		0.0
				SP2*NONE*1		25.94	15	56.00	74.9 - 115.1	0	0.0	
			35897	SP1*NONE*1	06 NOV 86	25.94	8.8	34.00	74.9 - 115.1	0		
				SP2*NONE*1		25.94	14	56.00	74.9 - 115.1	0	45.61	
2,4-DIMETHYLPHENOL	UG/L	34606*FI	35241	SP1*NONE*1	04 NOV 86	22.84	8.7	38.00	85 - 115	0		0.0
				SP2*NONE*1		22.84	12	53.00	85 - 115	0	31.88	
			35897	SP1*NONE*1	06 NOV 86	22.84	9.0	39.00	85 - 115	0		
				SP2*NONE*1		22.84	13	57.00	85 - 115	0	36.36	
2,4-DINITROPHENOL	UG/L	34616*FI	35241	SP1*NONE*1	04 NOV 86	7.33	3.5	48.00	28 - 128	0		53.00
				SP2*NONE*1		7.33	2.9	39.00	28 - 128	0	18.75	
			35897	SP1*NONE*1	06 NOV 86	7.33	5.7	77.00	28 - 128	0		
				SP2*NONE*1		7.33	3.9	53.00	28 - 128	0	37.50	
2-METHYL-4,6-DINITROPHENOL	UG/L	34657*FI	35241	SP1*NONE*1	04 NOV 86	6.66	3.9	59.00	75 - 115	0		0.0

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL4

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
				SP2*NONE*1		6.66	2.5	37.00	75 - 115	0	43.75	
			35897	SP1*NONE*1	06 NOV 86	6.66	4.2	62.00	75 - 115	0		
				SP2*NONE*1		6.66	3.7	55.00	75 - 115	0	12.66	
2-NITROPHENOL	UG/L	34591*F1	35241	SP1*NONE*1	04 NOV 86	8.83	5.2	59.00	85 - 115	0		0.0
				SP2*NONE*1		8.83	4.9	55.00	85 - 115	0	5 94	
			35897	SP1*NONE*1	06 NOV 86	8.83	4.5	51.00	85 - 115	0		
				SP2*NONE*1		8.83	4.7	53.00	85 - 115	0	4.35	
4-NITROPHENOL	UG/L	34646*F1	35241	SP1*NONE*1	04 NOV 86	12.47	3.4	27.00	85 - 115	0		0.0
				SP2*NONE*1		12.47	3.1	24.00	85 - 115	0	9.23	
			35897	SP1*NONE*1	06 NOV 86	12.47	8.6	69.00	85 - 115	0		
				SP2*NONE*1		12.47	3.3	26.00	85 - 115	0	89.08	
PENTACHLOROPHENOL	UG/L	39032*F1	35241	SP1*NONE*1	04 NOV 86	22.19	7.7	35.00	48 - 122	0		34.00
				SP2*NONE*1		22.19	9.2	41.00	48 - 122	0	17.75	
			35897	SP1*NONE*1	06 NOV 86	22.19	4.6	21.00	48 - 122	0		
				SP2*NONE*1		22.19	13	61.00	48 - 122	0	95.45	
PHENOL	UG/L	34694*F1	35241	SP1*NONE*1	04 NOV 86	65.84	21.2	32.10	33 - 97	0		47.00
				SP2*NONE*1		65.84	24.5	37.10	33 - 97	0	14.44	
			35897	SP1*NONE*1	06 NOV 86	65.84	16.6	25.10	33 - 97	0		
				SP2*NONE*1		65.84	19.0	28.80	33 - 97	0	13.48	
2,4,6-TRICHL'PHENOL	UG/L	34621*F1	35241	SP1*NONE*1	04 NOV 86	35.91	23	63.00	80 - 120	0		20.00
				SP2*NONE*1		35.91	21	58.00	80 - 120	0	9.09	
			35897	SP1*NONE*1	06 NOV 86	35.91	13	35.00	80 - 120	0		
				SP2*NONE*1		35.91	21	58.00	80 - 120	0	47.06	
HYDROCARBONS,PETRO	MG/L	45501*1	34552	SP1*NONE*1	30 OCT 86	8200.0	3.66	87.20	70.2 - 124.8	.0758		20.00
				SP2*NONE*1		8200.0	3.71	88.50	70.2 - 124.8	.0758	1.36	
			34627	SP1*NONE*1	06 NOV 86	8200.0	4.26	101.00	70.2 - 124.8	.1055		
				SP2*NONE*1		8200.0	4.31	102.00	70.2 - 124.8	.1055	1.17	
LEAD,TOTAL	UG/L	1051*GFAA	34894	SP1*NONE*1	25 NOV 86	50.00	57.1	103.00	80 - 120	3.3067		20.00
				SP2*NONE*1		50.00	59.3	108.00	80 - 120	3.3067	3.78	
				SP3*NONE*1		50.00	58.2	105.00	80 - 120	3.3067	1.91	
				SP1*NONE*2		50.00	61.4	112.00	80 - 120	3.3067	7.26	
				SP2*NONE*2		50.00	63.6	116.00	80 - 120	3.3067	10.77	
				SP1*NONE*3		50.00	65.7	121.00	80 - 120	3.3067	14.01	
				SP3*NONE*3		50.00	59.3	108.00	80 - 120	3.3067	3.78	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL4

Sample Matrix Spike Recovery Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	UNSPIKED	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM2*TYNDL2*7	21 OCT 86	0.20	0.20	101.00	55 - 131	0.0		
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM1*TYNDL4*1	21 OCT 86	0.20	0.17	86.50	55 - 131	0.0		
				SPM3*TYNDL4*7		0.20	0.17	85.00	55 - 131	0.0		
1,1-DICHLOROETHANE	UG/L	34496*HA		SPM2*TYNDL2*7		0.20	0.20	100.50	57 - 121	0.0		
				SPM1*TYNDL4*1		0.20	0.19	93.00	57 - 121	0.0		
				SPM3*TYNDL4*7		0.20	0.17	85.00	57 - 121	0.0		
1,2-DICHLOROETHANE	UG/L	34531*HA		SPM2*TYNDL2*7		0.20	0.23	115.50	63 - 135	0.0		
				SPM1*TYNDL4*1		0.20	0.20	102.00	63 - 135	0.0		
				SPM3*TYNDL4*7		0.20	0.19	94.50	63 - 135	0.0		
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SPM2*TYNDL2*7		0.20	0.20	101.00	53 - 125	0.0		
				SPM1*TYNDL4*1		0.20	0.20	99.00	53 - 125	0.0		
				SPM3*TYNDL4*7		0.20	0.17	83.00	53 - 125	0.0		
ETHYLBENZENE	UG/L	34371*PI		SPM2*TYNDL2*7		2.52	2.80	111.11	48 - 144	0.0		
				SPM1*TYNDL4*1		2.22	2.28	102.70	48 - 144	0.0		
				SPM3*TYNDL4*7		2.22	2.05	92.34	48 - 144	0.0		
TOLUENE	UG/L	34010*PI		SPM2*TYNDL2*7		2.44	2.45	100.41	59 - 135	0.0		
				SPM1*TYNDL4*1		2.14	2.34	109.35	59 - 135	0.0		
				SPM3*TYNDL4*7		2.14	2.06	96.26	59 - 135	0.0		
4-CHL'-3-METH'PHENOL	UG/L	34452*FI	35241	SPM*TYNDL4*15	04 NOV 86	49.11	39	77.97	39 - 101	4.0		
			35897	SPM*TYNDL4*8	06 NOV 86	34.41	21	59.84	39 - 101	1.6		
2-CHLOROPHENOL	UG/L	34586*FI	35241	SPM*TYNDL4*15	04 NOV 86	43.06	23	53.95	74.9 - 115.1	1.1		
			35897	SPM*TYNDL4*8	06 NOV 86	30.17	14	46.88	74.9 - 115.1	0.0		
2,4-DICHLOROPHENOL	UG/L	34601*FI	35241	SPM*TYNDL4*15	04 NOV 86	37.01	24	63.86	74.9 - 115.1	4.5		
			35897	SPM*TYNDL4*8	06 NOV 86	25.94	19	70.12	74.9 - 115.1	2.5		
2,4-DIMETHYLPHENOL	UG/L	34606*FI	35241	SPM*TYNDL4*15	04 NOV 86	32.60	20	61.17	85 - 115	3.4		
			35897	SPM*TYNDL4*8	06 NOV 86	22.84	8.6	35.51	85 - 115	2.6		
2,4-DINITROPHENOL	UG/L	34616*FI	35241	SPM*TYNDL4*15	04 NOV 86	10.46	11	95.90	28 - 128	8.2		
			35897	SPM*TYNDL4*8	06 NOV 86	7.33	4.5	27.56	28 - 128	13		
2-METHYL-4,6-DINITROPHENOL	UG/L	34657*FI	35241	SPM*TYNDL4*15	04 NOV 86	9.50	8.7	83.39	75 - 115	7.1		
			35897	SPM*TYNDL4*8	06 NOV 86	6.66	6.6	88.74	75 - 115	3.3		
2-NITROPHENOL	UG/L	34591*FI	35241	SPM*TYNDL4*15	04 NOV 86	12.60	9.0	67.57	85 - 115	4.3		
			35897	SPM*TYNDL4*8	06 NOV 86	8.83	0.34	0.0	85 - 115	1.7		
4-NITROPHENOL	UG/L	34646*FI	35241	SPM*TYNDL4*15	04 NOV 86	17.79	12	62.55	85 - 115	8.7		
			35897	SPM*TYNDL4*8	06 NOV 86	12.47	1.4	0.0	85 - 115	6.9		
PENTACHLOROPHENOL	UG/L	39032*FI	35241	SPM*TYNDL4*15	04 NOV 86	31.67	13	38.52	48 - 122	3.7		
			35897	SPM*TYNDL4*8	06 NOV 86	22.19	20	89.60	48 - 122	0.0		
PHENOL	UG/L	34694*FI	35241	SPM*TYNDL4*15	04 NOV 86	93.95	40.6	42.92	33 - 97	1.78		
			35897	SPM*TYNDL4*8	06 NOV 86	65.84	22.4	33.72	33 - 97	0.96		
2,4,6-TRICHL'PHENOL	UG/L	34621*FI	35241	SPM*TYNDL4*15	04 NOV 86	51.25	33	64.29	80 - 120	3.1		
			35897	SPM*TYNDL4*8	06 NOV 86	35.91	33	90.30	80 - 120	0.47		
HYDROCARBONS,PETRO	MG/L	45501*I	34552	SPM*TYNDL2*9	30 OCT 86	8225.0	5.21	22.16	70.2 - 124.8	4.20		
LEAD,TOTAL	UG/L	1051*GFAA	34894	SPM*NYPSC3*3	25 NOV 86	50.00	56.0	114.07	80 - 120	0		
				SPM*PPPE-3*3		100.00	126	114.15	80 - 120	11.8		
				SPM*SEMRF*7		50.00	51.7	105.46	80 - 120	0		
				SPM*TYNDL2*1		50.00	71.0	120.52	80 - 120	10.8		
				SPM*TYNDL4*1		50.00	66.7	133.44	80 - 120	.00002		
				SPM*TYNDL4*12		100.00	145	114.15	80 - 120	31.2		
				SPM*TYNDL4*4		50.00	72.1	131.28	80 - 120	6.46		
				SPM*TYNDL6*10		50.00	62.4	116.22	80 - 120	4.30		
				SPM*TYNDL6*12		100.00	132	96.93	80 - 120	35.5		
				SPM*TYNDL6*9		100.00	137	108.76	80 - 120	28.0		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL4
Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
BROMODICHLOROMETHANE	UG/L	32101*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOFORM	UG/L	32104*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOMETHANE	UG/L	34413*HA		MB*NONE*666		0
CARBON TETRACHLORIDE	UG/L	32102*HA		MB*NONE*666		0
CHLOROBENZENE	UG/L	34301*HA		MB*NONE*666		0
CHLOROETHANE	UG/L	34311*HA		MB*NONE*666		0
2-CHLOROETHYLVINYL ETHER	UG/L	34576*HA		MB*NONE*666		0
CHLOROFORM	UG/L	32106*HA		MB*NONE*666		0
CHLOROMETHANE	UG/L	34418*HA		MB*NONE*666		0
DIBROMOCHLOROMETHANE	UG/L	32105*HA		MB*NONE*666		0
DICHLOROBENZENE,TOT.	UG/L	81524*HA		MB*NONE*666		0
DICHLORODIFLUORO METHANE	UG/L	34668*HA		MB*NONE*666		0
1,1-DICHLOROETHANE	UG/L	34496*HA		MB*NONE*666		0
1,2-DICHLOROETHANE	UG/L	34531*HA		MB*NONE*666		0
1,1-DICHLOROETHYLENE	UG/L	34501*HA		MB*NONE*666		0
TRANS-1,2-DICHLORO ETHENE	UG/L	34546*HA		MB*NONE*666		0
1,2-DICHLOROPROPANE	UG/L	34541*HA		MB*NONE*666		0
CIS-1,3-DICHLORO PROPENE	UG/L	34704*HA		MB*NONE*666		0
TRANS-1,3-DICHLORO PROPENE	UG/L	34699*HA		MB*NONE*666		0
METHYLENE CHLORIDE	UG/L	34423*HA		MB*NONE*666		0
1,1,2,2-TETRACHLORO ETHANE	UG/L	34516*HA		MB*NONE*666		0
TETRACHLOROETHENE	UG/L	34475*HA		MB*NONE*666		0
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		MB*NONE*666		0
1,1,2-TRICHL'ETHANE	UG/L	34511*HA		MB*NONE*666		0
TRICHLOROETHENE	UG/L	39180*HA		MB*NONE*666		0
TRICHL'FLUOROMETHANE	UG/L	34488*HA		MB*NONE*666		0
VINYL CHLORIDE	UG/L	39175*HA		MB*NONE*666		0
BENZENE	UG/L	34030*PI		MB*NONE*666		0
ETHYLBENZENE	UG/L	34371*PI		MB*NONE*666		0
TOLUENE	UG/L	34010*PI		MB*NONE*666		0
4-CHL'-3-METH'PHENOL	UG/L	34452*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
2-CHLOROPHENOL	UG/L	34586*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
2,4-DICHLOROPHENOL	UG/L	34601*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
2,4-DIMETHYLPHENOL	UG/L	34606*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
2,4-DINITROPHENOL	UG/L	34616*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
2-METHYL-4,6-DINITROPHENOL	UG/L	34657*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
2-NITROPHENOL	UG/L	34591*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
4-NITROPHENOL	UG/L	34646*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
PENTACHLOROPHENOL	UG/L	39032*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
PHENOL	UG/L	34694*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
2,4,6-TRICHL'PHENOL	UG/L	34621*FI	35241	MB*NONE*1	04 NOV 86	0
			35897	MB*NONE*1	06 NOV 86	0
HYDROCARBONS,PETRO	MG/L	45501*I	34552	MB*NONE*1	30 OCT 86	.0758
			34627	MB*NONE*1	06 NOV 86	.1055
LEAD,TOTAL	UG/L	1051*GFAA	34894	MB1*NONE*1	25 NOV 86	3.3067
				MB1*NONE*2		4.3828

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL4

Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
				MB2*NONE*3		5.4589

FIELD GROUP
TYNDALL -5

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL5

DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL5*1	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTABLES(625)	34659
	ICAP METALS	35477
	MERCURY	34647
TYNDL5*2	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTABLES(625)	34659
	ICAP METALS	35477
	MERCURY	34647
TYNDL5*3	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTABLES(625)	34659
	ICAP METALS	35477
	MERCURY	34647
TYNDL5*4	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTABLES(625)	NA
	ICAP METALS	35477
	MERCURY	34647
TYNDL5*5	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTABLES(625)	34659
	ICAP METALS	36110
	MERCURY	34706
TYNDL5*6	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTABLES(625)	34659
	ICAP METALS	36110
	MERCURY	34706
TYNDL5*	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTABLES(625)	34659
	ICAP METALS	35675
	MERCURY	34619
TYNDL5*8	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTABLES(625)	34659
	ICAP METALS	NA
	MERCURY	34706
TYNDL5*9	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	BASE NEUTRAL ACID EXTRACTABLES(625)	34659
	ICAP METALS	[illegible]
	MERCURY	[illegible]

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL5

Replicate Analysis Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND	R.P.D.	MAX % REPL DIFF
MERCURY, TOTAL	UG/L	71900*CVAA	34819	RP*WQM-6*6	19 NOV 86	.497	16.27	20
MERCURY, TOTAL	UG/L	71900*CVAA	34819	RP*WHGW1*1	19 NOV 86	.2	0.0	
				RP*TYNDL5*7		.43	16.35	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS
Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP2*NONE*666	21 OCT 86	0.20	0.17	86.00	55 - 131	0	CANT CALC	31.00
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP3*NONE*666	21 OCT 86	0.20	0.21	107.00	55 - 131	0		31.00
				SP4*NONE*666		0.20	0.21	104.00	55 - 131	0	0.0	
				SP5*NONE*666		0.20	0.17	85.00	55 - 131	0	21.05	
				SP6*NONE*666		0.20	0.18	91.00	55 - 131	0	15.38	
1,1-DICHLOROETHANE	UG/L	34496*HA		SP1*NONE*666		0.20	0.17	84.00	57 - 121	0		30.00
				SP2*NONE*666		0.20	0.17	87.00	57 - 121	0	0.0	
				SP3*NONE*666		0.20	0.23	114.00	57 - 121	0	30.00	
				SP4*NONE*666		0.20	0.21	107.00	57 - 121	0	21.05	
				SP5*NONE*666		0.20	0.19	92.50	57 - 121	0	11.11	
				SP6*NONE*666		0.20	0.19	95.50	57 - 121	0	11.11	
1,2-DICHLOROETHANE	UG/L	34531*HA		SP1*NONE*666		0.20	0.17	82.50	63 - 135	0		27.00
				SP2*NONE*666		0.20	0.18	89.50	63 - 135	0	5.71	
				SP3*NONE*666		0.20	0.23	116.00	63 - 135	0	30.00	
				SP4*NONE*666		0.20	0.22	109.00	63 - 135	0	25.64	
				SP5*NONE*666		0.20	0.17	87.00	63 - 135	0	0.0	
				SP6*NONE*666		0.20	0.18	91.50	63 - 135	0	5.71	
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SP1*NONE*666		0.20	0.18	88.50	53 - 125	0		32.00
				SP2*NONE*666		0.20	0.18	88.00	53 - 125	0	0.0	
				SP3*NONE*666		0.20	0.22	109.00	53 - 125	0	20.00	
				SP4*NONE*666		0.20	0.23	115.00	53 - 125	0	24.39	
				SP5*NONE*666		0.20	0.18	90.00	53 - 125	0	0.0	
				SP6*NONE*666		0.20	0.20	101.00	53 - 125	0	10.53	
ETHYLBENZENE	UG/L	34371*PI		SP1*NONE*666		2.22	1.89	85.10	48 - 144	0		35.00
				SP2*NONE*666		2.22	1.89	85.10	48 - 144	0	0.0	
				SP3*NONE*666		2.52	2.53	100.00	48 - 144	0		
				SP4*NONE*666		2.52	2.37	94.00	48 - 144	0	6.53	
				SP5*NONE*666		2.22	1.87	84.20	48 - 144	0		
				SP6*NONE*666		2.22	1.80	81.10	48 - 144	0	3.81	
TOLUENE	UG/L	34010*PI		SP1*NONE*666		2.14	2.24	105.00	59 - 135	0		29.00
				SP2*NONE*666		2.14	2.24	105.00	59 - 135	0	0.0	
				SP3*NONE*666		2.44	2.49	102.00	59 - 135	0		
				SP4*NONE*666		2.44	2.25	92.20	59 - 135	0	10.13	
				SP5*NONE*666		2.14	1.71	79.90	59 - 135	0		
				SP6*NONE*666		2.14	1.74	81.30	59 - 135	0	1.74	
ARSENIC, TOTAL	UG/L	1002*ICAP	35075	SP1*NONE*1	01 DEC 86	1000.0	1120	106.00	80 - 120	65.34		20.00
				SP2*NONE*1		1000.0	1150	108.00	80 - 120	65.34	2.64	
				SP3*NONE*1		1000.0	1160	110.00	80 - 120	65.34	3.51	
			35477	SP1*NONE*1	14 JAN 87	1000.0	1020	102.00	80 - 120	0		
				SP2*NONE*1		1000.0	1040	104.00	80 - 120	0	1.94	
				SP3*NONE*1		1000.0	1030	103.00	80 - 120	0	0.98	
			36110	SP1*NONE*2	23 FEB 87	1000.0	957	95.70	80 - 120	0		
				SP3*NONE*2		1000.0	928	92.80	80 - 120	0	3.08	
ANTIMONY, TOTAL	UG/L	1097*ICAP	35075	SP1*NONE*1	01 DEC 86	500.00	523	105.00	80 - 120	0		20.00
				SP2*NONE*1		500.00	515	103.00	80 - 120	0	1.54	
				SP3*NONE*1		500.00	545	109.00	80 - 120	0	4.12	
			36110	SP1*NONE*2	23 FEB 87	500.00	464	92.70	80 - 120	0		
				SP3*NONE*2		500.00	444	88.90	80 - 120	0	4.41	
			36268	SP1*NONE*1	23 NOV 86	500.00	487	97.40	80 - 120	0		
				SP2*NONE*1		500.00	504	101.00	80 - 120	0	3.43	
				SP3*NONE*1		500.00	500	99.90	80 - 120	0	2.63	
				SP4*NONE*1		500.00	501	100.00	80 - 120	0	2.83	
BERYLLIUM, TOTAL	UG/L	1012*ICAP	35075	SP1*NONE*1	01 DEC 86	50.00	52.8	103.00	85 - 115	1.3		15.00
				SP2*NONE*1		50.00	49.7	96.80	85 - 115	1.3	6.05	
				SP3*NONE*1		50.00	56.4	110.00	85 - 115	1.3	6.59	
			35477	SP1*NONE*1	14 JAN 87	50.00	46.4	92.20	85 - 115	.28		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS
Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
				SP2*NONE*1		50.00	50.3	100.00	85 - 115	.28	8.07	
				SP3*NONE*1		50.00	51.8	103.00	85 - 115	.28	11.00	
			36110	SP1*NONE*2	23 FEB 87	50.00	40.0	80.00	85 - 115	0		
				SP3*NONE*2		50.00	37.6	75.30	85 - 115	0	6.19	
CADMIUM, TOTAL	UG/L	1027*ICAP	35075	SP1*NONE*1	01 DEC 86	50.00	55.2	108.00	85 - 115	1.29		15.00
				SP2*NONE*1		50.00	53.6	105.00	85 - 115	1.29	2.94	
				SP3*NONE*1		50.00	56.7	111.00	85 - 115	1.29	2.66	
			36110	SP1*NONE*2	23 FEB 87	50.00	51.0	102.00	85 - 115	0		
				SP3*NONE*2		50.00	52.8	106.00	85 - 115	0	3.47	
			36268	SP1*NONE*1	23 NOV 86	50.00	51.8	101.00	85 - 115	1.08		
				SP2*NONE*1		50.00	52.4	103.00	85 - 115	1.08	1.15	
				SP3*NONE*1		50.00	52.5	103.00	85 - 115	1.08	1.34	
				SP4*NONE*1		50.00	53.5	105.00	85 - 115	1.08	3.23	
CHROMIUM, TOTAL	UG/L	1034*ICAP	35075	SP1*NONE*1	01 DEC 86	200.00	209	104.00	80 - 120	.46		20.00
				SP2*NONE*1		200.00	215	107.00	80 - 120	.46	2.83	
				SP3*NONE*1		200.00	209	104.00	80 - 120	.46	0.0	
			36110	SP1*NONE*2	23 FEB 87	200.00	174	87.00	80 - 120	0		
				SP3*NONE*2		200.00	173	86.60	80 - 120	0	0.58	
			36268	SP1*NONE*1	23 NOV 86	200.00	198	99.20	80 - 120	0		
				SP2*NONE*1		200.00	204	102.00	80 - 120	0	2.99	
				SP3*NONE*1		200.00	201	100.00	80 - 120	0	1.50	
				SP4*NONE*1		200.00	206	103.00	80 - 120	0	3.96	
COPPER, TOTAL	UG/L	1042*ICAP	35075	SP1*NONE*1	01 DEC 86	250.00	248	99.30	85 - 115	.08		15.00
				SP2*NONE*1		250.00	247	98.60	85 - 115	.08	0.40	
				SP3*NONE*1		250.00	250	99.90	85 - 115	.08	0.80	
			36110	SP1*NONE*2	23 FEB 87	250.00	224	89.70	85 - 115	0		
				SP3*NONE*2		250.00	223	89.40	85 - 115	0	0.45	
			36268	SP1*NONE*1	23 NOV 86	250.00	247	98.60	85 - 115	0		
				SP2*NONE*1		250.00	249	99.50	85 - 115	0	0.81	
				SP3*NONE*1		250.00	248	99.30	85 - 115	0	0.40	
				SP4*NONE*1		250.00	253	101.00	85 - 115	0	2.40	
LEAD, TOTAL	UG/L	1051*ICAP	35075	SP1*NONE*1	01 DEC 86	500.00	557	101.00	80 - 120	49.36		20.00
				SP2*NONE*1		500.00	545	99.00	80 - 120	49.36	2.18	
				SP3*NONE*1		500.00	558	102.00	80 - 120	49.36	0.18	
			36110	SP1*NONE*2	23 FEB 87	500.00	463	92.70	80 - 120	0		
				SP3*NONE*2		500.00	447	89.30	80 - 120	0	3.52	
			36268	SP1*NONE*1	23 NOV 86	500.00	521	104.00	80 - 120	0		
				SP2*NONE*1		500.00	531	106.00	80 - 120	0	1.90	
				SP3*NONE*1		500.00	544	109.00	80 - 120	0	4.32	
				SP4*NONE*1		500.00	549	110.00	80 - 120	0	5.23	
NICKEL, TOTAL	UG/L	1067*ICAP	35075	SP1*NONE*1	01 DEC 86	500.00	543	109.00	80 - 120	0		20.00
				SP2*NONE*1		500.00	543	109.00	80 - 120	0	0.0	
				SP3*NONE*1		500.00	546	109.00	80 - 120	0	0.55	
			36110	SP1*NONE*2	23 FEB 87	500.00	488	97.70	80 - 120	0		
				SP3*NONE*2		500.00	470	94.00	80 - 120	0	3.76	
			36268	SP1*NONE*1	23 NOV 86	500.00	524	103.00	80 - 120	9.73		
				SP2*NONE*1		500.00	546	107.00	80 - 120	9.73	4.11	
				SP3*NONE*1		500.00	526	103.00	80 - 120	9.73	0.38	
				SP4*NONE*1		500.00	542	107.00	80 - 120	9.73	3.38	
SELENIUM, TOTAL	UG/L	1147*ICAP	35075	SP1*NONE*1	01 DEC 86	1000.0	1110	102.00	80 - 120	94.49		20.00
				SP2*NONE*1		1000.0	1110	102.00	80 - 120	94.49	0.0	
				SP3*NONE*1		1000.0	1110	102.00	80 - 120	94.49	0.0	
			36110	SP1*NONE*2	23 FEB 87	1000.0	951	95.10	80 - 120	23.4		
				SP3*NONE*2		1000.0	913	91.30	80 - 120	23.4	4.08	
			36268	SP1*NONE*1	23 NOV 86	1000.0	1060	103.00	80 - 120	26.46		
				SP2*NONE*1		1000.0	1080	105.00	80 - 120	26.46	1.87	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL5

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
				SP3*NONE*1		1000.0	1060	103.00	80 - 120	26.46	0.0	
				SP4*NONE*1		1000.0	1060	104.00	80 - 120	26.46	0.0	
SILVER, TOTAL	UG/L	1077*ICAP	35075	SP1*NONE*1	01 DEC 86	100.00	119	106.00	70 - 110	12.64		20.00
				SP2*NONE*1		100.00	117	104.00	70 - 110	12.64	1.69	
				SP3*NONE*1		100.00	129	117.00	70 - 110	12.64	8.06	
			36110	SP1*NONE*2	23 FEB 87	100.00	94.9	94.90	70 - 110	6		
				SP3*NONE*2		100.00	92.6	92.60	70 - 110	6	2.45	
			36268	SP1*NONE*1	23 NOV 86	100.00	99.2	98.50	70 - 110	.67		
				SP2*NONE*1		100.00	101	100.00	70 - 110	.67	1.60	
				SP3*NONE*1		100.00	101	101.00	70 - 110	.67	1.60	
				SP4*NONE*1		100.00	107	106.00	70 - 110	.67	7.57	
THALLIUM, TOTAL	UG/L	1059*ICAP	35075	SP1*NONE*1	01 DEC 86	10000	10300	102.00	80 - 120	63.05		20.00
				SP2*NONE*1		10000	10300	102.00	80 - 120	63.05	0.0	
				SP3*NONE*1		10000	10200	102.00	80 - 120	63.05	0.98	
			36110	SP1*NONE*2	23 FEB 87	10000	8460	84.60	80 - 120	0		
				SP3*NONE*2		10000	8450	84.50	80 - 120	0	0.12	
			36268	SP1*NONE*1	23 NOV 86	10000	9790	97.90	80 - 120	0		
				SP2*NONE*1		10000	9810	98.10	80 - 120	0	0.20	
				SP3*NONE*1		10000	9780	97.80	80 - 120	0	0.10	
				SP4*NONE*1		10000	10200	102.00	80 - 120	0	4.10	
ZINC, TOTAL	UG/L	1092*ICAP	35075	SP1*NONE*1	01 DEC 86	500.00	563	113.00	85 - 115	0		15.00
				SP2*NONE*1		500.00	553	111.00	85 - 115	0	1.79	
				SP3*NONE*1		500.00	581	116.00	85 - 115	0	3.15	
			36110	SP1*NONE*2	23 FEB 87	500.00	490	97.70	85 - 115	2.08		
				SP3*NONE*2		500.00	482	96.00	85 - 115	2.08	1.65	
			36268	SP1*NONE*1	23 NOV 86	500.00	519	102.00	85 - 115	6.67		
				SP2*NONE*1		500.00	535	106.00	85 - 115	6.67	3.04	
				SP3*NONE*1		500.00	539	106.00	85 - 115	6.67	3.78	
				SP4*NONE*1		500.00	548	108.00	85 - 115	6.67	5.44	
MERCURY, TOTAL	UG/L	71900*CVAA	34647	SP2*NONE*1	05 NOV 86	5.00	4.95	95.10	80 - 120	.1938		20.00
				SP1*NONE*1		5.00	4.77	91.50	80 - 120	.1938	3.70	
			34706	SP1*NONE*1	12 NOV 86	4.70	4.10	87.20	80 - 120	.8023		
				SP2*NONE*1		4.70	4.58	97.50	80 - 120	.8023	11.06	
				SP3*NONE*1		4.70	4.85	103.00	80 - 120	.8023	16.76	
			34819	SP1*NONE*1	19 NOV 86	5.00	4.90	98.00	80 - 120	.2		
				SP2*NONE*1		5.00	5.16	103.00	80 - 120	.2	5.17	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS
Sample Matrix Spike Recovery Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	UNSPIKED	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM2*TYNDL2*7	21 OCT 86	0.20	0.20	101.00	55 - 131	0.0		
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM1*TYNDL4*1	21 OCT 86	0.20	0.17	86.50	55 - 131	0.0		
				SPM3*TYNDL4*7		0.20	0.17	85.00	55 - 131	0.0		
1,1-DICHLOROETHANE	UG/L	34496*HA		SPM2*TYNDL2*7		0.20	0.20	100.50	57 - 121	0.0		
				SPM1*TYNDL4*1		0.20	0.19	93.00	57 - 121	0.0		
				SPM3*TYNDL4*7		0.20	0.17	85.00	57 - 121	0.0		
1,2-DICHLOROETHANE	UG/L	34531*HA		SPM2*TYNDL2*7		0.20	0.23	115.50	63 - 135	0.0		
				SPM1*TYNDL4*1		0.20	0.20	102.00	63 - 135	0.0		
				SPM3*TYNDL4*7		0.20	0.19	94.50	63 - 135	0.0		
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SPM2*TYNDL2*7		0.20	0.20	101.00	53 - 125	0.0		
				SPM1*TYNDL4*1		0.20	0.20	99.00	53 - 125	0.0		
				SPM3*TYNDL4*7		0.20	0.17	83.00	53 - 125	0.0		
ETHYLBENZENE	UG/L	34371*PI		SPM2*TYNDL2*7		2.52	2.80	111.11	48 - 144	0.0		
				SPM1*TYNDL4*1		2.22	2.28	102.70	48 - 144	0.0		
				SPM3*TYNDL4*7		2.22	2.05	92.34	48 - 144	0.0		
TOLUENE	UG/L	34010*PI		SPM2*TYNDL2*7		2.44	2.45	100.41	59 - 135	0.0		
				SPM1*TYNDL4*1		2.14	2.34	109.35	59 - 135	0.0		
				SPM3*TYNDL4*7		2.14	2.06	96.26	59 - 135	0.0		
ARSENIC, TOTAL	UG/L	1002*ICAP	35075	SPM*PEP8*1	01 DEC 86	1000.0	1130	112.46	80 - 120	10.1		
				SPM*PEP8*10		1087.1	1340	119.58	80 - 120	39.2		
			35477	SPM*TYNDL3*1	14 JAN 87	1000.0	1110	102.71	80 - 120	86.4		
				SPM*TYNDL3*3		963.36	1230	107.03	80 - 120	203		
				SPM*TYNDL5*1		1000.0	1000	99.71	80 - 120	5.06		
				SPM*TYNDL5*4		963.36	1030	105.83	80 - 120	6.00		
			36110	SPM*TYNDL5*5	23 FEB 87	1000.0	949	94.94	80 - 120	0.0		
				SPM*TYNDL5*8		1000.0	941	94.06	80 - 120	0.0		
ANTIMONY, TOTAL	UG/L	1097*ICAP	35075	SPM*PEP8*1	01 DEC 86	500.00	532	104.64	80 - 120	9.15		
				SPM*PEP8*10		984.02	1150	116.53	80 - 120	0.0		
			36110	SPM*TYNDL5*5	23 FEB 87	500.00	444	88.81	80 - 120	0.0		
				SPM*TYNDL5*8		1000.0	899	89.87	80 - 120	0.0		
			36268	SPM*TYNDL5*9	23 NOV 86	500.00	515	103.01	80 - 120	0.0		
BERYLLIUM, TOTAL	UG/L	1012*ICAP	35075	SPM*PEP8*1	01 DEC 86	50.00	54.0	110.64	85 - 115	0		
				SPM*PEP8*10		956.25	1120	117.51	85 - 115	0		
			35477	SPM*TYNDL3*1	14 JAN 87	50.00	44.3	61.42	85 - 115	13.6		
				SPM*TYNDL3*3		853.68	956	111.96	85 - 115	0		
				SPM*TYNDL5*1		50.00	52.0	87.20	85 - 115	8.37		
				SPM*TYNDL5*4		853.68	935	109.52	85 - 115	0		
			36110	SPM*TYNDL5*5	23 FEB 87	50.00	43.1	86.16	85 - 115	0.0		
				SPM*TYNDL5*8		1000.0	920	92.01	85 - 115	0.0		
CADMIUM, TOTAL	UG/L	1027*ICAP	35075	SPM*PEP8*1	01 DEC 86	50.00	54.3	108.52	85 - 115	0.0		
				SPM*PEP8*10		1006.7	1160	115.19	85 - 115	0.0		
			36110	SPM*TYNDL5*5	23 FEB 87	50.00	51.3	102.66	85 - 115	0.0		
				SPM*TYNDL5*8		1000.0	926	92.56	85 - 115	0.0		
			36268	SPM*TYNDL5*9	23 NOV 86	50.00	52.9	105.70	85 - 115	0.0		
CHROMIUM, TOTAL	UG/L	1034*ICAP	35075	SPM*PEP8*1	01 DEC 86	200.00	219	109.51	80 - 120	0		
				SPM*PEP8*10		966.77	1140	118.44	80 - 120	0		
			36110	SPM*TYNDL5*5	23 FEB 87	200.00	186	93.23	80 - 120	0.0		
				SPM*TYNDL5*8		1000.0	935	93.53	80 - 120	0.0		
			36268	SPM*TYNDL5*9	23 NOV 86	200.00	200	99.75	80 - 120	0.03		
COPPER, TOTAL	UG/L	1042*ICAP	35075	SPM*PEP8*1	01 DEC 86	250.00	251	99.04	85 - 115	3.10		
				SPM*PEP8*10		929.21	1050	113.28	85 - 115	0.55		
			36110	SPM*TYNDL5*5	23 FEB 87	250.00	235	89.54	85 - 115	10.8		
				SPM*TYNDL5*8		1000.0	906	90.64	85 - 115	0.0		
			36268	SPM*TYNDL5*9	23 NOV 86	250.00	251	99.76	85 - 115	1.12		
LEAD, TOTAL	UG/L	1051*ICAP	35075	SPM*PEP8*1	01 DEC 86	500.00	513	106.43	80 - 120	0.0		
				SPM*PEP8*10		1020.9	1150	116.87	80 - 120	0.0		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL5

Sample Matrix Spike Recovery Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	UNSPIKED	R.P.D.	R.P.D. CRIT.
			36110	SPM*TYNDL5*5	23 FEB 87	500.00	482	92.91	80 - 120	17.0		
				SPM*TYNDL5*8		1000.0	945	94.51	80 - 120	0.0		
			36268	SPM*TYNDL5*9	23 NOV 86	500.00	535	107.06	80 - 120	0.0		
NICKEL, TOTAL	UG/L	1067*ICAP	35075	SPM*PEP8*1	01 DEC 86	500.00	542	108.37	80 - 120	0.0		
				SPM*PEP8*10		978.86	1130	115.88	80 - 120	0.0		
			36110	SPM*TYNDL5*5	23 FEB 87	500.00	480	95.96	80 - 120	0.0		
				SPM*TYNDL5*8		1000.0	904	90.35	80 - 120	0.0		
			36268	SPM*TYNDL5*9	23 NOV 86	500.00	544	106.80	80 - 120	10.3		
SELENIUM, TOTAL	UG/L	1147*ICAP	35075	SPM*PEP8*1	01 DEC 86	1000.0	1070	105.71	80 - 120	0.0		
				SPM*PEP8*10		1111.4	1380	121.87	80 - 120	0.0		
			36110	SPM*TYNDL5*5	23 FEB 87	1000.0	967	99.05	80 - 120	0		
				SPM*TYNDL5*8		1000.0	948	97.18	80 - 120	0		
			36268	SPM*TYNDL5*9	23 NOV 86	1000.0	1110	106.20	80 - 120	43.3		
SILVER, TOTAL	UG/L	1077*ICAP	35075	SPM*PEP8*1	01 DEC 86	100.00	109	105.96	70 - 110	3.24		
				SPM*PEP8*10		970.89	1130	115.09	70 - 110	8.10		
			36110	SPM*TYNDL5*5	23 FEB 87	100.00	92.5	91.03	70 - 110	1.47		
				SPM*TYNDL5*8		500.00	439	87.80	70 - 110	0.02		
			36268	SPM*TYNDL5*9	23 NOV 86	100.00	105	102.86	70 - 110	2.17		
THALLIUM, TOTAL	UG/L	1059*ICAP	35075	SPM*PEP8*1	01 DEC 86	10000	10400	103.65	80 - 120	0.0		
				SPM*PEP8*10		1025.5	1200	118.52	80 - 120	0.0		
			36110	SPM*TYNDL5*5	23 FEB 87	10000	8530	85.35	80 - 120	0.0		
				SPM*TYNDL5*8		1000.0	870	86.97	80 - 120	0.0		
			36268	SPM*TYNDL5*9	23 NOV 86	10000	9860	97.98	80 - 120	61.6		
ZINC, TOTAL	UG/L	1092*ICAP	35075	SPM*PEP8*1	01 DEC 86	500.00	575	112.74	85 - 115	11.7		
				SPM*PEP8*10		1014.4	1210	116.62	85 - 115	27.3		
			36110	SPM*TYNDL5*5	23 FEB 87	500.00	527	97.28	85 - 115	40.3		
				SPM*TYNDL5*8		1000.0	926	92.09	85 - 115	4.91		
			36268	SPM*TYNDL5*9	23 NOV 86	500.00	541	106.13	85 - 115	10.1		
MERCURY, TOTAL	UG/L	71900*CVAA	34647	SPM*TYNDL5*1	05 NOV 86	5.00	4.45	91.48	80 - 120	0		
				SPM*TYNDL5*2		5.00	4.45	91.48	80 - 120	0		
			34706	SPM*MXWLW*1	12 NOV 86	4.70	4.16	81.59	80 - 120	0.32		
			34819	SPM*PEP8*8	19 NOV 86	5.00	4.83	100.60	80 - 120	0.0		
				SPM*WHGWI*2		5.00	4.54	94.80	80 - 120	0.0		
				SPM*WQM-6*2		5.00	5.36	97.74	80 - 120	0.47		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS
Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
BROMODICHLOROMETHANE	UG/L	32101*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOFORM	UG/L	32104*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOMETHANE	UG/L	34413*HA		MB*NONE*666		0
CARBON TETRACHLORIDE	UG/L	32102*HA		MB*NONE*666		0
CHLOROBENZENE	UG/L	34301*HA		MB*NONE*666		0
CHLOROETHANE	UG/L	34311*HA		MB*NONE*666		0
2-CHLOROETHYLVINYL ETHER	UG/L	34576*HA		MB*NONE*666		0
CHLOROFORM	UG/L	32106*HA		MB*NONE*666		0
CHLOROMETHANE	UG/L	34418*HA		MB*NONE*666		0
DIBROMOCHLOROMETHANE	UG/L	32105*HA		MB*NONE*666		0
DICHLORODIFLUORO METHANE	UG/L	34668*HA		MB*NONE*666		0
1,1-DICHLOROETHANE	UG/L	34496*HA		MB*NONE*666		0
1,2-DICHLOROETHANE	UG/L	34531*HA		MB*NONE*666		0
1,1-DICHLOROETHYLENE	UG/L	34501*HA		MB*NONE*666		0
TRANS-1,2-DICHLORO ETHENE	UG/L	34546*HA		MB*NONE*666		0
1,2-DICHLOROPROPANE	UG/L	34541*HA		MB*NONE*666		0
CIS-1,3-DICHLORO PROPENE	UG/L	34704*HA		MB*NONE*666		0
TRANS-1,3-DICHLORO PROPENE	UG/L	34699*HA		MB*NONE*666		0
METHYLENE CHLORIDE	UG/L	34423*HA		MB*NONE*666		0
1,1,2,2-TETRACHLORO ETHANE	UG/L	34516*HA		MB*NONE*666		0
TETRACHLOROETHENE	UG/L	34475*HA		MB*NONE*666		0
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		MB*NONE*666		0
1,1,2-TRICHL'ETHANE	UG/L	34511*HA		MB*NONE*666		0
TRICHLOROETHENE	UG/L	39180*HA		MB*NONE*666		0
TRICHL'FLUOROMETHANE	UG/L	34488*HA		MB*NONE*666		0
VINYL CHLORIDE	UG/L	39175*HA		MB*NONE*666		0
BENZENE	UG/L	34030*PI		MB*NONE*666		0
ETHYLBENZENE	UG/L	34371*PI		MB*NONE*666		0
TOLUENE	UG/L	34010*PI		MB*NONE*666		0
ARSENIC, TOTAL	UG/L	1002*ICAP	35075	MB*NONE*1	01 DEC 86	65.34
			35477	MB*NONE*1	14 JAN 87	0
				MB*NONE*2		2.78
			36110	MB*NONE*1	23 FEB 87	0
				MB*NONE*2		0
ANTIMONY, TOTAL	UG/L	1097*ICAP	35075	MB*NONE*1	01 DEC 86	0
			36110	MB*NONE*1	23 FEB 87	0
				MB*NONE*2		0
			36268	MB*NONE*1	23 NOV 86	0
				MB*NONE*2		0
BERYLLIUM, TOTAL	UG/L	1012*ICAP	35075	MB*NONE*1	01 DEC 86	1.3
			35477	MB*NONE*1	14 JAN 87	.28
				MB*NONE*2		0
			36110	MB*NONE*1	23 FEB 87	0
				MB*NONE*2		0
CADMIUM, TOTAL	UG/L	1027*ICAP	35075	MB*NONE*1	01 DEC 86	1.29
			36110	MB*NONE*1	23 FEB 87	0
				MB*NONE*2		0
			36268	MB*NONE*1	23 NOV 86	1.08
				MB*NONE*2		.86
CHROMIUM, TOTAL	UG/L	1034*ICAP	35075	MB*NONE*1	01 DEC 86	.46
			36110	MB*NONE*1	23 FEB 87	0
				MB*NONE*2		0
			36268	MB*NONE*1	23 NOV 86	0
				MB*NONE*2		0
COPPER TOTAL	UG/L	1042*ICAP	35075	MB*NONE*1	01 DEC 86	.08
			36110	MB*NONE*1	23 FEB 87	0

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL5
Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
				MB*NONE*2		0
			36268	MB*NONE*1	23 NOV 86	0
				MB*NONE*2		0
LEAD, TOTAL	UG/L	1051*ICAP	35075	MB*NONE*1	01 DEC 86	49.36
			36110	MB*NONE*1	23 FEB 87	0
				MB*NONE*2		0
			36268	MB*NONE*1	23 NOV 86	0
				MB*NONE*2		20.57
NICKEL, TOTAL	UG/L	1067*ICAP	35075	MB*NONE*1	01 DEC 86	0
			36110	MB*NONE*1	23 FEB 87	0
				MB*NONE*2		0
			36268	MB*NONE*1	23 NOV 86	9.73
				MB*NONE*2		0
SELENIUM, TOTAL	UG/L	1147*ICAP	35075	MB*NONE*1	01 DEC 86	94.49
			36110	MB*NONE*1	23 FEB 87	23.4
				MB*NONE*2		0
			36268	MB*NONE*1	23 NOV 86	26.46
				MB*NONE*2		41.15
SILVER, TOTAL	UG/L	1077*ICAP	35075	MB*NONE*1	01 DEC 86	12.64
			36110	MB*NONE*1	23 FEB 87	6
				MB*NONE*2		0
			36268	MB*NONE*1	23 NOV 86	.67
				MB*NONE*2		.16
THALLIUM, TOTAL	UG/L	1059*ICAP	35075	MB*NONE*1	01 DEC 86	63.05
			36110	MB*NONE*1	23 FEB 87	0
				MB*NONE*2		0
			36268	MB*NONE*1	23 NOV 86	0
				MB*NONE*2		0
ZINC, TOTAL	UG/L	1092*ICAP	35075	MB*NONE*1	01 DEC 86	0
			36110	MB*NONE*1	23 FEB 87	2.08
				MB*NONE*2		2.07
			36268	MB*NONE*1	23 NOV 86	6.67
				MB*NONE*2		14.75
MERCURY, TOTAL	UG/L	71900*CVAA	34647	MB*NONE*1	05 NOV 86	.1938
			34706	MB1*NONE*1	12 NOV 86	.8023
				MB2*NONE*1		.1002
			34819	MB1*NONE*1	19 NOV 86	.2

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FIELD GROUP
TYNDALL - 6

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL6
DATE: 01 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL6*1	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34552
	LEAD,TOTAL	34894
TYNDL6*2	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34552
	LEAD,TOTAL	34894
TYNDL6*3	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34552
	LEAD,TOTAL	35121
TYNDL6*4	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34552
	LEAD,TOTAL	34894
TYNDL6*5	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34552
	LEAD,TOTAL	34894
TYNDL6*6	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34552
	LEAD,TOTAL	34894
TYNDL6*7	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34552
	LEAD,TOTAL	35121
TYNDL6*8	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34552
	LEAD,TOTAL	34894
TYNDL6*9	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34470
	LEAD,TOTAL	34894
TYNDL6*10	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34552
	LEAD,TOTAL	34894
TYNDL5*11	VOLATILE AROMATICS(602)	34825

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL6
DATE: Ø1 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL6*11	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34627
	LEAD,TOTAL	34894
TYNDL6*12	VOLATILE AROMATICS(602)	34825
	VOLATILE HALOCARBONS(601)	34825
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	34627
	LEAD,TOTAL	34894
TYNDL6*13	VOLATILE AROMATICS(602)	NA
	VOLATILE HALOCARBONS(601)	NA
	1,2-DIBROMOETHANE (EDB)	34522
	HYDROCARBONS,PETRO	NA
	LEAD,TOTAL	NA

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL6

Replicate Analysis Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND	R.P.D.	MAX % REPL DIFF
HYDROCARBONS,PETRO	MG/L	45501*1	34627	RP1*TYNDL6*10	06 NOV 86	.1642	30.90	20
HYDROCARBONS,PETRO	MG/L	45501*1	34627	RP2*TYNDL6*10	06 NOV 86	.1642	0.0	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL6

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP2*NONE*666	21 OCT 86	0.20	0.17	86.00	55 - 131	0		31.00
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SP3*NONE*666	21 OCT 86	0.20	0.21	107.00	55 - 131	0		31.00
				SP4*NONE*666		0.20	0.21	104.00	55 - 131	0	0.0	
				SP5*NONE*666		0.20	0.17	85.00	55 - 131	0	21.05	
				SP6*NONE*666		0.20	0.18	91.00	55 - 131	0	15.38	
1,1-DICHLOROETHANE	UG/L	34496*HA		SP1*NONE*666		0.20	0.17	84.00	57 - 121	0		30.00
				SP2*NONE*666		0.20	0.17	87.00	57 - 121	0	0.0	
				SP3*NONE*666		0.20	0.23	114.00	57 - 121	0	30.00	
				SP4*NONE*666		0.20	0.21	107.00	57 - 121	0	21.05	
				SP5*NONE*666		0.20	0.19	92.50	57 - 121	0	11.11	
				SP6*NONE*666		0.20	0.19	95.50	57 - 121	0	11.11	
1,2-DICHLOROETHANE	UG/L	34531*HA		SP1*NONE*666		0.20	0.17	82.50	63 - 135	0		27.00
				SP2*NONE*666		0.20	0.18	89.50	63 - 135	0	5.71	
				SP3*NONE*666		0.20	0.23	116.00	63 - 135	0	30.00	
				SP4*NONE*666		0.20	0.22	109.00	63 - 135	0	25.64	
				SP5*NONE*666		0.20	0.17	87.00	63 - 135	0	0.0	
				SP6*NONE*666		0.20	0.18	91.50	63 - 135	0	5.71	
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SP1*NONE*666		0.20	0.18	88.50	53 - 125	0		32.00
				SP2*NONE*666		0.20	0.18	88.00	53 - 125	0	0.0	
				SP3*NONE*666		0.20	0.22	109.00	53 - 125	0	20.00	
				SP4*NONE*666		0.20	0.23	115.00	53 - 125	0	24.39	
				SP5*NONE*666		0.20	0.18	90.00	53 - 125	0	0.0	
				SP6*NONE*666		0.20	0.20	101.00	53 - 125	0	10.53	
ETHYLBENZENE	UG/L	34371*PI		SP1*NONE*666		2.22	1.89	85.10	48 - 144	0		35.00
				SP2*NONE*666		2.22	1.89	85.10	48 - 144	0	0.0	
				SP3*NONE*666		2.52	2.53	100.00	48 - 144	0		
				SP4*NONE*666		2.52	2.37	94.00	48 - 144	0	6.53	
				SP5*NONE*666		2.22	1.87	84.20	48 - 144	0		
				SP6*NONE*666		2.22	1.80	81.10	48 - 144	0	3.81	
TOLUENE	UG/L	34010*PI		SP1*NONE*666		2.14	2.24	105.00	59 - 135	0		29.00
				SP2*NONE*666		2.14	2.24	105.00	59 - 135	0	0.0	
				SP3*NONE*666		2.44	2.49	102.00	59 - 135	0		
				SP4*NONE*666		2.44	2.25	92.20	59 - 135	0	10.13	
				SP5*NONE*666		2.14	1.71	79.90	59 - 135	0		
				SP6*NONE*666		2.14	1.74	81.30	59 - 135	0	1.74	
X.LENES,TOTAL	UG/L	81551*PI		SP1*NONE*666		6.02	5.22	86.70	56 - 134	0		30.00
				SP2*NONE*666		6.02	5.22	86.70	56 - 134	0	0.0	
				SP3*NONE*666		6.02	7.12	118.00	56 - 134	0	30.79	
				SP4*NONE*666		6.02	6.67	111.00	56 - 134	0	24.39	
				SP5*NONE*666		6.02	5.21	86.50	56 - 134	0	0.19	
				SP6*NONE*666		6.02	5.08	84.40	56 - 134	0	2.72	
1,2-DIBROMOETHANE (EDB)	UG/L	77651*EC	34522	SP1*NONE*1	27 OCT 86	0.29	0.31	107.00	60 - 140	0		29.00
				SP2*NONE*1		0.29	0.30	104.00	60 - 140	0	3.28	
HYDROCARBONS,PETRO	MG/L	45501*I	34470	SP1*NONE*1	22 OCT 86	8200.0	3.86	92.60	70.2 - 124.8	.0591		20.00
				SP2*NONE*1		8200.0	3.92	94.00	70.2 - 124.8	.0591	1.54	
			34552	SP1*NONE*1	30 OCT 86	8200.0	3.66	87.20	70.2 - 124.8	.0758		
				SP2*NONE*1		8200.0	3.71	88.50	70.2 - 124.8	.0758	1.36	
			34627	SP1*NONE*1	06 NOV 86	8200.0	4.26	101.00	70.2 - 124.8	.1055		
				SP2*NONE*1		8200.0	4.31	102.00	70.2 - 124.8	.1055	1.17	
LEAD,TOTAL	UG/L	1051*GFAA	34894	SP1*NONE*1	25 NOV 86	50.00	57.1	103.00	80 - 120	3.3067		20.00
				SP2*NONE*1		50.00	59.3	108.00	80 - 120	3.3067	3.78	
				SP3*NONE*1		50.00	58.2	105.00	80 - 120	3.3067	1.91	
				SP1*NONE*2		50.00	61.4	112.00	80 - 120	3.3067	7.26	
				SP2*NONE*2		50.00	63.6	116.00	80 - 120	3.3067	10.77	
				SP1*NONE*3		50.00	65.7	121.00	80 - 120	3.3067	14.01	
				SP3*NONE*3		50.00	59.3	108.00	80 - 120	3.3067	3.78	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL6

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
			35121	SP1*NONE*1	12 DEC 86	50.00	47.7	95.50	80 - 120	.1434		
				SP2*NONE*1		50.00	47.7	95.50	80 - 120	.1434	0.0	
				SP1*NONE*2		50.00	57.1	114.00	80 - 120	.1434	17.94	
				SP2*NONE*2		50.00	52.4	105.00	80 - 120	.1434	9.39	
				SP1*NONE*3		50.00	43.1	86.10	80 - 120	.1434	10.13	
				SP2*NONE*3		50.00	47.3	94.60	80 - 120	.1434	0.84	
				SP1*NONE*4		50.00	57.5	115.00	80 - 120	.1434	18.63	
				SP2*NONE*4		50.00	53.3	107.00	80 - 120	.1434	11.09	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL6
Sample Matrix Spike Recovery Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	UNSPIKED	R.P.D.	R.P.D. CRIT.
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM2*TYNDL2*7	21 OCT 86	0.20	0.20	101.00	55 - 131	0.0		
CARBON TETRACHLORIDE	UG/L	32102*HA	34825	SPM1*TYNDL4*1	21 OCT 86	0.20	0.17	86.50	55 - 131	0.0		
				SPM3*TYNDL4*7		0.20	0.17	85.00	55 - 131	0.0		
1,1-DICHLOROETHANE	UG/L	34496*HA		SPM2*TYNDL2*7		0.20	0.20	100.50	57 - 121	0.0		
				SPM1*TYNDL4*1		0.20	0.19	93.00	57 - 121	0.0		
				SPM3*TYNDL4*7		0.20	0.17	85.00	57 - 121	0.0		
1,2-DICHLOROETHANE	UG/L	34531*HA		SPM2*TYNDL2*7		0.20	0.23	115.50	63 - 135	0.0		
				SPM1*TYNDL4*1		0.20	0.20	102.00	63 - 135	0.0		
				SPM3*TYNDL4*7		0.20	0.19	94.50	63 - 135	0.0		
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		SPM2*TYNDL2*7		0.20	0.20	101.00	53 - 125	0.0		
				SPM1*TYNDL4*1		0.20	0.20	99.00	53 - 125	0.0		
				SPM3*TYNDL4*7		0.20	0.17	83.00	53 - 125	0.0		
ETHYLBENZENE	UG/L	34371*PI		SPM2*TYNDL2*7		2.52	2.80	111.11	48 - 144	0.0		
				SPM1*TYNDL4*1		2.22	2.28	102.70	48 - 144	0.0		
				SPM3*TYNDL4*7		2.22	2.05	92.34	48 - 144	0.0		
TOLUENE	UG/L	34010*PI		SPM2*TYNDL2*7		2.44	2.45	100.41	59 - 135	0.0		
				SPM1*TYNDL4*1		2.14	2.34	109.35	59 - 135	0.0		
				SPM3*TYNDL4*7		2.14	2.06	96.26	59 - 135	0.0		
XYLENES, TOTAL	UG/L	81551*PI		SPM2*TYNDL2*7		6.02	8.76	145.51	56 - 134	0.0		
				SPM1*TYNDL4*1		6.02	8.48	140.86	56 - 134	0.0		
				SPM3*TYNDL4*7		6.02	6.67	110.80	56 - 134	0.0		
1,2-DIBROMOETHANE (EDB)	UG/L	77651*EC	34522	SPM*TYNDL6*1	27 OCT 86	0.29	0.29	100.34	60 - 140	0.0		
HYDROCARBONS, PETRO	MG/L	45501*I	34552	SPM*TYNDL2*9	30 OCT 86	8225.0	5.21	22.16	70.2 - 124.8	4.20		
LEAD, TOTAL	UG/L	1051*GFAA	34894	SPM*NYPSC3*3	25 NOV 86	50.00	56.0	114.07	80 - 120	U		
				SPM*PPPE-3*3		100.00	126	114.15	80 - 120	11.6		
				SPM*SEMRF*7		50.00	51.7	105.46	80 - 120	U		
				SPM*TYNDL2*1		50.00	71.0	120.52	80 - 120	10.8		
				SPM*TYNDL4*1		50.00	66.7	133.44	80 - 120	.00002		
				SPM*TYNDL4*12		100.00	145	114.15	80 - 120	31.2		
				SPM*TYNDL4*4		50.00	72.1	131.28	80 - 120	6.46		
				SPM*TYNDL6*10		50.00	62.4	116.22	80 - 120	4.30		
				SPM*TYNDL6*12		100.00	132	96.93	80 - 120	35.5		
				SPM*TYNDL6*9		100.00	137	108.76	80 - 120	28.0		
			35121	SPM*PEP9*12	12 DEC 86	100.00	111	111.62	80 - 120	U		
				SPM*TYNDL6*7		100.00	119	104.25	80 - 120	14.9		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDL6
Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
BROMODICHLOROMETHANE	UG/L	32101*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOFORM	UG/L	32104*HA	34825	MB*NONE*666	21 OCT 86	0
BROMOMETHANE	UG/L	34413*HA		MB*NONE*666		0
CARBON TETRACHLORIDE	UG/L	32102*HA		MB*NONE*666		0
CHLOROBENZENE	UG/L	34301*HA		MB*NONE*666		0
CHLOROETHANE	UG/L	34311*HA		MB*NONE*666		0
2-CHLOROETHYLVINYL ETHER	UG/L	34576*HA		MB*NONE*666		0
CHLOROFORM	UG/L	32106*HA		MB*NONE*666		0
CHLOROMETHANE	UG/L	34418*HA		MB*NONE*666		0
DIBROMOCHLOROMETHANE	UG/L	32105*HA		MB*NONE*666		0
DICHLOROBENZENE, TOT.	UG/L	81524*HA		MB*NONE*666		0
DICHLORODIFLUORO METHANE	UG/L	34668*HA		MB*NONE*666		0
1,1-DICHLOROETHANE	UG/L	34496*HA		MB*NONE*666		0
1,2-DICHLOROETHANE	UG/L	34531*HA		MB*NONE*666		0
1,1-DICHLOROETHYLENE	UG/L	34501*HA		MB*NONE*666		0
TRANS-1,2-DICHLORO ETHENE	UG/L	34546*HA		MB*NONE*666		0
1,2-DICHLOROPROPANE	UG/L	34541*HA		MB*NONE*666		0
CIS-1,3-DICHLORO PROPENE	UG/L	34704*HA		MB*NONE*666		0
TRANS-1,3-DICHLORO PROPENE	UG/L	34699*HA		MB*NONE*666		0
METHYLENE CHLORIDE	UG/L	34423*HA		MB*NONE*666		0
1,1,2,2-TETRACHLORO ETHANE	UG/L	34516*HA		MB*NONE*666		0
TETRACHLOROETHENE	UG/L	34475*HA		MB*NONE*666		0
1,1,1-TRICHL'ETHANE	UG/L	34506*HA		MB*NONE*666		0
1,1,2-TRICHL'ETHANE	UG/L	34511*HA		MB*NONE*666		0
TRICHLOROETHENE	UG/L	39180*HA		MB*NONE*666		0
TRICHL'FLUOROMETHANE	UG/L	34488*HA		MB*NONE*666		0
VINYL CHLORIDE	UG/L	39175*HA		MB*NONE*666		0
BENZENE	UG/L	34030*PI		MB*NONE*666		0
ETHYLBENZENE	UG/L	34371*PI		MB*NONE*666		0
TOLUENE	UG/L	34010*PI		MB*NONE*666		0
XYLENES, TOTAL	UG/L	81551*PI		MB*NONE*666		0
1,2-DIBROMOETHANE (EDB)	UG/L	77651*EC	34522	MB*NONE*1	27 OCT 86	0
HYDROCARBONS, PETRO	MG/L	45501*I	34470	MB*NONE*1	22 OCT 86	.0591
			34552	MB*NONE*1	30 OCT 86	.0758
			34627	MB*NONE*1	06 NOV 86	.1055
LEAD, TOTAL	UG/L	1051*GFAA	34894	MB1*NONE*1	25 NOV 86	3.3067
				MB1*NONE*2		4.3828
				MB2*NONE*3		5.4589
			35121	MB1*NONE*1	12 DEC 86	.1434
				MB1*NONE*2		0
				MB2*NONE*3		0
				MB1*NONE*4		0

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDL7
DATE: Ø1 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDL7*1	HYDROCARBONS, PETROL	34700
	LEAD, SED	34900
	MOISTURE	34427
	VOLATILE ORGANICS(624)	34449
TYNDL7*2	HYDROCARBONS, PETROL	34700
	LEAD, SED	34900
	MOISTURE	34427
	VOLATILE ORGANICS(624)	34449
TYNDL7*3	HYDROCARBONS, PETROL	34700
	LEAD, SED	34900
	MOISTURE	34427
	VOLATILE ORGANICS(624)	34449

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL7
DATE: 01 MAR 1988

Replicate Analysis Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND	R.P.D.	MAX % REPL DIFF
MOISTURE	%WET WT	70320*1	34900	RP*HAZ2*5	25 NOV 86	1.9	0.0	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL7
DATE: 01 MAR 1988

Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
HYDROCARBONS, PETROL	UG/G-DRY	98233*1	34700	SP1*NONE*1	13 NOV 86	8200.0	16.1	92.70	70.2 - 124.8	.8639		20.00
HYDROCARBONS, PETROL	UG/G-DRY	98233*1	34700	SP2*NONE*1	13 NOV 86	8200.0	16.5	95.40	70.2 - 124.8	.8639		20.00
LEAD, SED	UG/G-DRY	1052*GFAA	34900	SP1*NONE*1	25 NOV 86	0.05	10.8	103.00	80 - 120	.4583		20.00
				SP2*NONE*1		0.05	11.3	108.00	80 - 120	.4583	4.52	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL7
DATE: Ø1 MAR 1988

Sample Matrix Spike Recovery Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	UNSPIKED	R.P.D.	R.P.D. CRIT.
HYDROCARBONS,PETROL	UG/G-DRY	98233*1	34700	SPM*TYNDL1*2	13 NOV 86	8225.0	769	119.32	70.2 - 124.8	258		
LEAD,SED	UG/G-DRY	1052*GFAA	34900	SPM*TYNDL7*3	25 NOV 86	0.40	254	109.84	80 - 120	97.8		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AFB - FIELD GROUP TYNDL7
DATE: Ø1 MAR 1988

Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
HYDROCARBONS, PETROL	UG/G-DRY	98233*1	34700	MB*NONE*1	13 NOV 86	8639
LEAD, SED	UG/G-DRY	1052*GFAA	34900	MB*NONE*1	25 NOV 86	4583

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ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
SAMPLE / BATCH REPORT FOR FIELD GROUP TYNDLS
DATE: Ø1 MAR 1988

SAMPLE ID	PARAMETER NAME	BATCH #
TYNDLS*1	EP-TOX DATE OF EXTRACTION	34261
	ORGANOCHLORINE PEST.(608)	34688
	ORGANOCHLORINE HERB.(615)	35444
	ICAP METALS	35015
	ARSENIC	34770
	SELENIUM	35183
	MERCURY	34584
TYNDLS*2	EP-TOX DATE OF EXTRACTION	34261
	ORGANOCHLORINE PEST.(608)	34688
	ORGANOCHLORINE HERB.(615)	35444
	ICAP METALS	35015
	ARSENIC	34770
	SELENIUM	35183
	MERCURY	34584
TYNDLS*3	EP-TOX DATE OF EXTRACTION	34403
	ORGANOCHLORINE PEST.(608)	34813
	ORGANOCHLORINE HERB.(615)	35444
	ICAP METALS	35222
	ARSENIC	34770
	SELENIUM	34756
	MERCURY	34706

ENVIRONMENTAL SCIENCE & ENGINEERING 02/29/88 PAGE# 1

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDLS PROJECT MANAGER D.M. HALE
EPMP1 LAB COORDINATOR DILNA HALE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	SOT9-4 TYNDLS 1	SOT9-3 TYNDLS 2	SOTEP3 TYNDLS 3
DATE		10/05/86	10/05/86	10/15/86
TIME		17:45	15:45	14:00
EP-TOX.DATE OF EXTRA	97078	10/14/86	10/14/86	10/21/86
CTION	MP	34261	34261	34403
ENDRIN	39390	<0.133	<0.064	<0.083
UG/L	EC	34688	34688	34813
BHC.G(LINDANE)	39340	<0.066	<0.032	<0.041
UG/L	EC	34688	34688	34813
METHOXYCHLOR	39480	<0.347	<0.168	<0.217
UG/L	EC	34688	34688	34813
TOXAPHENE	39400	<1.57	<0.758	<0.978
UG/L	EC	34688	34688	34813
2,4-D, TOTAL	39730	<0.222	<0.222	<0.222
UG/L	EC	35444	35444	35444
2,4,5-TP/SILVEX	39760	<0.056	<0.056	<0.056
UG/L	EC	35444	35444	35444
CADMIUM.DISS	1025A	<0.0047	<0.0047	<0.0036
MG/L	ICAP	35015	35015	35222
CHROMIUM.DISS	1030A	<0.0190	<0.0190	<0.0054
MG/L	ICAP	35015	35015	35222
LEAD.DISS	1049A	<0.0330	<0.0330	<0.0220
MG/L	ICAP	35015	35015	35222
SILVER.DISS	1075A	<0.0059	<0.0059	<0.0048
MG/L	ICAP	35015	35015	35222
ARSENIC.DISS	1000A	0.0041	0.0067	0.0041
MG/L	GFAA	34770	34770	34770
MERCURY.DISS.	71890A	0.0003	<0.0002	<0.0002
MG/L	CVAA	34584	34584	34706
SELENIUM.DISS	1145A	<0.0031	<0.0031	<0.0042
MG/L	GFAA	35183	35183	34756
BARIUM.DISS	1005A	0.161	0.102	0.213
MG/L	ICAP	35015	35015	35222

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS
Standard Matrix Spike Recovery and Replicate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
ENDRIN	UG/L	39390*EC	34688	SP1*NONE*1	18 OCT 86	0.25	4300000	89.00	60 - 130	.0145		30.00
ENDRIN	UG/L	39390*EC	34813	SP1*NONE*1	21 NOV 86	0.25	0.002	0.0	60 - 130	.002		30.00
BHC.G(LINDANE)	UG/L	39340*EC	34688	SP1*NONE*1	18 OCT 86	0.12	0.0	124.00	60 - 130	.0069		30.00
			34813	SP1*NONE*1	21 NOV 86	0.12	0.0	94.80	60 - 130	.0031		
METHOXYCHLOR	UG/L	39480*EC	34688	SP1*NONE*1	18 OCT 86	0.65	0.0	112.00	80 - 120	.0099		20.00
			34813	SP1*NONE*1	21 NOV 86	0.65	0.0	85.80	80 - 120	.0291		
2,4-D, TOTAL	UG/L	39730*EC	35444	SP1*NONE*1	02 NOV 86	7.31	4.21	57.20	50 - 130	0		33.00
2,4,5-TP/SILVEX	UG/L	39760*EC		SP1*NONE*1		1.11	0.59	51.40	50 - 130	.0154		33.00
CADMIUM.DISS	UG/L	1025*ICAP	35015	SP2*NONE*1	24 NOV 86	50.00	52.4	103.00	85 - 115	1.08		15.00
				SP1*NONE*1		50.00	51.8	101.00	85 - 115	1.08	[illegible]	
				SP3*NONE*1		50.00	52.5	103.00	85 - 115	1.08	[illegible]	
			35222	SP1*NONE*1	22 DEC 86	50.00	50.0	100.00	85 - 115	0		
				SP2*NONE*1		50.00	48.9	97.80	85 - 115	0	2.22	
				SP3*NONE*1		50.00	56.7	113.00	85 - 115	0	12.[illegible]	
CHROMIUM.DISS	UG/L	1030*ICAP	35015	SP2*NONE*1	24 NOV 86	200.00	204	102.00	85 - 115	0		15.00
				SP1*NONE*1		200.00	198	99.20	85 - 115	0	2.99	
				SP3*NONE*1		200.00	201	100.00	85 - 115	0	1.46	
			35222	SP1*NONE*1	22 DEC 86	200.00	191	84.60	85 - 115	21.28		
				SP2*NONE*1		200.00	193	85.90	85 - 115	21.28	1.04	
				SP3*NONE*1		200.00	206	92.30	85 - 115	21.28	7.56	
LEAD.DISS	UG/L	1049*ICAP	35015	SP2*NONE*1	24 NOV 86	500.00	531	106.00	80 - 120	0		20.00
				SP1*NONE*1		500.00	521	104.00	80 - 120	0	1.90	
				SP3*NONE*1		500.00	544	109.00	80 - 120	0	2.42	
			35222	SP1*NONE*1	22 DEC 86	500.00	474	94.70	80 - 120	0		
				SP2*NONE*1		500.00	465	93.10	80 - 120	0	1.92	
				SP3*NONE*1		500.00	506	101.00	80 - 120	0	6.5[illegible]	
SILVER.DISS	UG/L	1075*ICAP	35015	SP2*NONE*1	24 NOV 86	100.00	101	100.00	70 - 110	.67		20.00
				SP1*NONE*1		100.00	99.2	98.50	70 - 110	.67	1.80	
				SP3*NONE*1		100.00	101	101.00	70 - 110	.67	0.0	
			35222	SP1*NONE*1	22 DEC 86	100.00	101	101.00	70 - 110	0		
				SP2*NONE*1		100.00	94.4	94.40	70 - 110	0	6.76	
				SP3*NONE*1		100.00	112	112.00	70 - 110	0	10.33	
ARSENIC.DISS	UG/L	1000*GFAA	34770	SP1*NONE*1	17 NOV 86	25.00	28.6	97.90	80 - 120	1.5618		20.00
				SP2*NONE*1		25.00	31.1	108.00	80 - 120	1.5618	8.38	
				SP3*NONE*1		25.00	27.1	91.80	80 - 120	1.5618	5.39	
				SP1*NONE*2		25.00	30.1	104.00	80 - 120	1.5618	5.11	
				SP2*NONE*2		25.00	30.6	106.00	80 - 120	1.5618	6.76	
				SP3*NONE*2		25.00	30.6	106.00	80 - 120	1.5618	6.76	
				SP1*NONE*3		25.00	32.2	112.00	80 - 120	1.5618	11.84	
				SP2*NONE*3		25.00	28.6	97.90	80 - 120	1.5618	0.0	
				SP3*NONE*3		25.00	29.1	99.90	80 - 120	1.5618	1.73	
				SP2*NONE*4		25.00	29.1	99.90	80 - 120	1.5618	1.73	
				SP3*NONE*4		25.00	28.1	95.90	80 - 120	1.5618	1.76	
				SP4*NONE*4		25.00	28.1	95.90	80 - 120	1.5618	1.76	
MERCURY.DISS.	UG/L	71890*CVAA	34584	SP2*NONE*2	30 OCT 86	5.00	4.86	97.20	80 - 120	.3456		20.00
				SP3*NONE*2		5.00	4.79	95.90	80 - 120	.3456	1.45	
			34706	SP1*NONE*1	12 NOV 86	4.70	4.10	87.20	80 - 120	.8023		
				SP2*NONE*1		4.70	4.58	97.50	80 - 120	.8023	11.06	
				SP3*NONE*1		4.70	4.85	103.00	80 - 120	.8023	16.76	
SELENIUM.DISS	UG/L	1145*GFAA	34756	SP1*NONE*1	14 NOV 86	25.00	26.8	107.00	80 - 120	.6691		20.00
				SP3*NONE*1		25.00	26.2	105.00	80 - 120	.6691	2.26	
				SP1*NONE*2		25.00	27.4	109.00	80 - 120	.6691	2.21	
				SP2*NONE*2		25.00	27.4	109.00	80 - 120	.6691	2.21	
				SP3*NONE*2		25.00	25.6	102.00	80 - 120	.6691	4.58	
			35183	SP1*NONE*1	09 DEC 86	25.00	23.5	93.80	80 - 120	.0625		
				SP2*NONE*1		25.00	23.1	92.20	80 - 120	.0625	1.72	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS

Standard Matrix Spike Recovery and Repl cate Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	MET*BLK	R.P.D.	R.P.D. CRIT.
				SP4*NONE*1		25.00	24.7	98.50	80 - 120	.0625	4.98	
BARIUM,DISS	UG/L	1005*ICAP	35015	SP2*NONE*1	24 NOV 86	2000.0	2020	101.00	85 - 115	1.08		15.00
				SP1*NONE*1		2000.0	2000	99.90	85 - 115	1.08	1.00	
				SP3*NONE*1		2000.0	2010	101.00	85 - 115	1.08	0.50	
			35222	SP1*NONE*1	22 DEC 86	2000.0	1970	98.70	85 - 115	0		
				SP2*NONE*1		2000.0	1930	96.60	85 - 115	0	[illegible]	
				SP3*NONE*1		2000.0	2030	102.00	85 - 115	0	[illegible]	

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS
Sample Matrix Spike Recovery Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	TARGET	FOUND	%REC	REC. CRIT.	UNSPIKED	R.P.D.	R.P.D. CRIT.
ENDRIN	UG/L	39390*EC	34688	SPM*TYNDLS*1	18 OCT 86	0.53	598000	22.38	60 - 130	0.03		
ENDRIN	UG/L	39390*EC	34813	SPM*TYNDLS*3	21 NOV 86	0.33	0.0	92.58	60 - 130	0.003		
BHC, G(LINDANE)	UG/L	39340*EC	34688	SPM*TYNDLS*1	18 OCT 86	0.26	0.0	114.87	60 - 130	0.01		
			34813	SPM*TYNDLS*3	21 NOV 86	0.17	0.0	110.78	60 - 130	0.004		
METHOXYCHLOR	UG/L	39480*EC	34688	SPM*TYNDLS*1	18 OCT 86	1.39	0.0	95.22	80 - 120	0.02		
			34813	SPM*TYNDLS*3	21 NOV 86	0.87	0.0	116.47	80 - 120	0.04		
2,4-D, TOTAL	UG/L	39730*EC	35444	SPM*TYNDLS*1	02 NOV 86	7.31	7.10	96.52	50 - 130	0.0		
2,4,5-TP/SILVEX	UG/L	39760*EC		SPM*TYNDLS*1		1.11	1.02	89.93	50 - 130	0.02		
CADMIUM, DISS	UG/L	1025*ICAP	35015	SPM*TYNDLS*2	24 NOV 86	50.00	50.7	99.24	85 - 115	1.03		
			35222	SPM*TYNDLS*3	22 DEC 86	500.00	480	95.97	85 - 115	0.0		
CHROMIUM, DISS	UG/L	1030*ICAP	35015	SPM*TYNDLS*2	24 NOV 86	200.00	214	103.71	85 - 115	6.63		
			35222	SPM*TYNDLS*3	22 DEC 86	500.00	478	99.30	85 - 115	0		
LEAD, DISS	UG/L	1049*ICAP	35015	SPM*TYNDLS*2	24 NOV 86	500.00	587	112.54	80 - 120	24.5		
			35222	SPM*TYNDLS*3	22 DEC 86	500.00	451	90.17	80 - 120	0.0		
SILVER, DISS	UG/L	1075*ICAP	35015	SPM*TYNDLS*2	24 NOV 86	100.00	106	104.16	70 - 110	2.26		
			35222	SPM*TYNDLS*3	22 DEC 86	500.00	479	95.83	70 - 110	0.0		
ARSENIC, DISS	UG/L	1000*GFAA	34770	SPM*ADCMQ2*1	17 NOV 86	25.00	24.0	83.62	80 - 120	0.0		
				SPM*MXWLW*1		25.00	28.1	79.54	80 - 120	0.0		
				SPM*MXWLW*8		100.00	128	107.61	80 - 120	0.0		
				SPM*SSRNWH1*1		25.00	28.1	101.97	80 - 120	0.0		
				SPM*SSRNWH1*14		100.00	119	116.79	80 - 120	0.0		
				SPM*SSRNWH1*2		25.00	32.2	89.74	80 - 120	0.0		
				SPM*SSRNWH1*4		100.00	100	97.42	80 - 120	0.0		
				SPM*WHGW1*4		100.00	114	111.69	80 - 120	0.0		
MERCURY, DISS.	UG/L	71890*CVAA	34706	SPM*MXWLW*1	12 NOV 86	4.70	4.16	81.59	80 - 120	0.0		
SELENIUM, DISS	UG/L	1145*GFAA		SPM*PEPS*12	86318	100.00	95.6	92.03	80 - 120	0.0		
				SPM*TYNDLS*3		100.00	89.7	86.10	80 - 120	3.56		
				SPM1*TYNDLS*2	86343	100.00	93.9	92.68	80 - 120	1.17		
BARIUM, DISS	UG/L	1005*ICAP	35015	SPM*TYNDLS*2	24 NOV 86	2000.0	2160	102.99	85 - 115	100		
			35222	SPM*TYNDLS*3	22 DEC 86	500.00	717	100.82	85 - 115	213		

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
QUALITY CONTROL SUMMARY FOR TYNDALL AIR FORCE BASE-FIELD GROUP TYNDLS
Method Blank Sample Summary

NAME	UNITS	STORET*METHOD	BATCH	SAMPLE	DATE	FOUND
EP-TOX DATE OF EXTRACTION		97078*MP	34403	MB*NONE*1	22 OCT 86	0
ENDRIN	UG/L	39390*EC	34688	MB*NONE*1	18 OCT 86	.0145
			34813	MB*NONE*1	21 NOV 86	.002
BHC G(LINDANE)	UG/L	39340*EC	34688	MB*NONE*1	18 OCT 86	.0069
			34813	MB*NONE*1	21 NOV 86	.0031
METHOXYCHLOR	UG/L	39480*EC	34688	MB*NONE*1	18 OCT 86	.0099
			34813	MB*NONE*1	21 NOV 86	.0291
TOXAPHENE	UG/L	39400*EC	34688	MB*NONE*1	18 OCT 86	0
			34813	MB*NONE*1	21 NOV 86	0
2 4 D TOTAL	UG/L	39730*EC	35444	MB*NONE*1	02 NOV 86	0
2 4 5 TP SILVEX	UG/L	39760*EC		MB*NONE*1		.0154
CADMIUM DISS	UG/L	1025*ICAP	35015	MB*NONE*1	24 NOV 86	1.08
				MB*NONE*2		.86
			35222	MB*NONE*1	22 DEC 86	0
CHROMIUM DISS	UG/L	1030*ICAP	35015	MB*NONE*1	24 NOV 86	0
				MB*NONE*2		0
			35222	MB*NONE*1	22 DEC 86	21.28
LEAD DISS	UG/L	1049*ICAP	35015	MB*NONE*1	24 NOV 86	0
				MB*NONE*2		20.57
			35222	MB*NONE*1	22 DEC 86	0
SILVER DISS	UG/L	1075*ICAP	35015	MB*NONE*1	24 NOV 86	.67
				MB*NONE*2		.16
			35222	MB*NONE*1	22 DEC 86	0
ARSENIC DISS	UG/L	1000*GFAA	34770	MB2*NONE*1	17 NOV 86	1.5618
				MB2*NONE*2		.5421
				MB1*NONE*3		1.5618
				MB1*NONE*4		4.1112
MERCURY DISS	UG/L	71890*CVAA	34584	MB1*NONE*1	30 OCT 86	.3456
				MB2*NONE*2		.1403
			34706	MB1*NONE*1	12 NOV 86	.8023
				MB2*NONE*1		.1002
SELENIUM DISS	UG/L	1145*GFAA	34756	MB1*NONE*1	14 NOV 86	.6691
				MB2*NONE*1		.6691
				MB1*NONE*2		2.4488
				MB2*NONE*2		1.2623
			35183	MB*NONE*1	09 DEC 86	.0625
BARIUM DISS	UG/L	1005*ICAP	35015	MB*NONE*1	24 NOV 86	1.08
				MB*NONE*2		.41
			35222	MB*NONE*1	22 DEC 86	0

APPENDIX R

ANALYTICAL RESULTS FOR GROUND WATERS, SURFACE WATERS, SEDIMENTS, AND SOILS

FIELD GROUP
TYNDALL - 1

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PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL1 PROJECT MANAGER RANDY SCHULZE
SZ2.11R LAB COORDINATOR DAVE KNOTHE

PARAMETERS / UNITS	STORET # / METHOD	SAMPLE ID/# SOT11-1 TYNDL1 1	SOT11-2 TYNDL1 2	SOT11-3 TYNDL1 3
DATE		10/15/86	10/16/86	10/16/86
TIME		15:15	08:40	09:15
HYDROCARBONS,PETROL MG/KG	98233A 1	1200	260	27000
LEAD,SED MG/KG	1052A GFAA	1.8	2.9	0.52
MOISTURE %WET WT	70320 1	8.3	10.7	6.2
BENZENE MG/KG	34237A GMS	4.9	<0.22	<0.23
BROMODICHLOROMETHANE MG/KG	34330A GMS	<0.12	<0.11	<0.12
BROMOFORM MG/KG	34290A GMS	<0.26	<0.24	<0.25
BROMOMETHANE MG/KG	34416A GMS	<0.32	<0.29	<0.31
CARBON TETRACHLORIDE MG/KG	34299A GMS	<0.15	<0.14	<0.15
CHLOROBENZENE MG/KG	34304A GMS	<0.33	<0.30	<0.32
CHLOROETHANE MG/KG	34314A GMS	<0.45	<0.41	<0.44
2-CHLOROETHYLVINYL ETHER MG/KG	34579A GMS	<0.55	<0.50	<0.53
CHLOROFORM MG/KG	34318A GMS	0.088	<0.080	<0.085
CHLOROMETHANE MG/KG	34421A GMS	<0.23	<0.22	<0.23
DIBROMOCHLOROMETHANE MG/KG	34309A GMS	<0.17	<0.16	<0.17
DICHLOROBENZENE,TOTAL MG/KG	98578A GMS	<0.22	<0.20	<0.21
1,1-DICHLOROETHANE MG/KG	34499A GMS	<0.26	<0.24	<0.25
1,2-DICHLOROETHANE MG/KG	34534A GMS	<0.15	<0.14	<0.15
1,1-DICHLOROETHYLENE MG/KG	34504A GMS	<0.17	<0.16	<0.17
TRANS-1,2-DICHLORO[illegible]	34549A	<0.087	<0.080	<0.085

ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS:FINAL PAGE# 2

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL1 PROJECT MANAGER RANDY SCHULZE
SZ2.11R LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	SAMPLE ID/# SOT11-1 TYNDL1 1	SOT11-2 TYNDL1 2	SOT11-3 TYNDL1 3
DATE		10/15/86	10/16/86	10/16/86
TIME		15:15	08:40	09:15
CIS-1,3-DICHLORO PROPENE MG/KG	34702A GMS	<0.27	<0.25	<0.27
TRANS-1,3-DICHLORO PROPENE MG/KG	34697A GMS	<0.35	<0.32	<0.34
ETHYLBENZENE MG/KG	34374A GMS	22	<0.36	<0.38
METHYLENE CHLORIDE MG/KG	34426A GMS	<0.15	<0.14	<0.15
1,1,2,2-TETRACHLORO ETHANE MG/KG	34519A GMS	<0.22	<0.21	<0.22
TETRACHLOROETHENE MG/KG	34478A GMS	<0.22	<0.21	<0.22
TOLUENE MG/KG	34483A GMS	40	<0.30	<0.32
1,1,1-TRICHL'ETHANE MG/KG	34509A GMS	<0.21	<0.19	<0.20
1,1,2-TRICHL'ETHANE MG/KG	34514A GMS	<0.27	<0.25	<0.27
TRICHLOROETHENE MG/KG	34487A GMS	<0.10	<0.095	<0.10
TRICHLOROFLUOROMETHANE MG/KG	34491A GMS	<0.17	<0.16	<0.17
VINYL CHLORIDE MG/KG	34495A GMS	<0.27	<0.25	<0.26
M-XYLENE MG/KG	97016A GMS	77	<0.30	<0.32
O,P-XYLENE MG/KG	97017A GMS	74	<0.30	<0.32
ACROLEIN, SED MG/KG	34213A GMS	<5.5	<5.0	<5.3
ACRYLONITRILE, SED MG/KG	34218A GMS	<5.5	<5.0	<5.3

FIELD GROUP
TYNDALL - 2

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ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS:FINAL PAGE# 1

PROJECT NUMBER 86449 0000 — PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL2 ZONE2R — PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	GLH2-1 TYNDL2 1	GLH2-2 TYNDL2 2	GLH2-3 TYNDL2 3	GLH2-4 TYNDL2 4	GLH2-7 TYNDL2 5	GLH2QA** TYNDL2 6	GLH2-8 TYNDL2 7	GLH2-9 TYNDL2 8	SWLH2 TYNDL2 9
					SAMPLE ID/#					
DATE		10/14/86	10/14/86	10/14/86	10/14/86	10/22/86	10/22/86	10/22/86	10/22/86	10/14/86
TIME		11:15	11:25	14.25	14:10	13:15	13:15	12:30	11:10	13:15
BROMODICHLOROMETHANE UG/L	32101 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
BROMOFORM UG/L	32104 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
BROMOMETHANE UG/L	34413 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
CARBON TETRACHLORIDE UG/L	32102 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
CHLOROBENZENE UG/L	34301 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
CHLOROETHANE UG/L	34311 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
CHLOROFORM UG/L	32106 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
CHLOROMETHANE UG/L	34418 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	1.4*	<0.050	<0.050
DIBROMOCHLOROMETHANE UG/L	32105 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
DICHLOROBENZENE, TOT. UG/L	81524 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
DICHLORODIFLUORO METHANE UG/L	34668 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
1,1-DICHLOROETHANE UG/L	34496 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
1,2 DICHLOROETHANE UG/L	34531 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
1,1-DICHLOROETHYLENE UG/L	34501 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
1,2-DICHLOROPROPANE UG/L	34541 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
TRANS-1,3-DICHLORO PROPENE UG/L	34699 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
METHYLENE CHLORIDE UG/L	34423 HA	<0.050	<0.050	<0.050	0.095+	<0.050	NA	<0.050	<0.050	<0.050

* Single column quantification, unable to confirm by second column due to interference
** Single column quantification, second column confirmation was not conducted.

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL2 PROJECT MANAGER RANDY SCHULZE
ZONE 2R LAB COORDINATOR DAVE KNOTHE

PARAMETERS / UNITS	STORET # / METHOD	GLH2-1 TYNDL2 1	GLH2-2 TYNDL2 2	GLH2-3 TYNDL2 3	GLH2-4 TYNDL2 4	GLH2-7 TYNDL2 5	GLH2QA** TYNDL2 6	GLH2-8 TYNDL2 7	GLH2-9 TYNDL2 8	SWLH2 TYNDL2 9
DATE		10/14/86	10/14/86	10/14/86	10/14/86	10/22/86	10/22/86	10/22/86	10/22/86	10/14/86
TIME		11:15	11:25	14:25	14:10	13:15	13:15	12:30	11:10	13:15
1,1,2,2-TETRACHLORO ETHANE UG/L	34516 HA	<0.050	<0.050	<0.050	<0.25	<0.050	NA	<0.050	<0.050	<0.050
TETRACHLOROETHENE UG/L	34475 HA	<0.050	<0.050	<0.050	<0.25	<0.050	NA	<0.050	<0.050	<0.050
1,1,1-TRICHL'ETHANE UG/L	34506 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
1,1,2-TRICHL'ETHANE UG/L	34511 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
TRICHLOROETHENE UG/L	39180 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
TRICHL'FLUOROMETHANE UG/L	34488 HA	<0.050	<0.050	<0.050	0.10+	<0.050	NA	<0.050	<0.050	<0.050
VINYL CHLORIDE UG/L	39175 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050
BENZENE UG/L	34030 PI	<0.50	<0.50	<0.50	<0.50	<0.50	NA	<0.50	<0.50	0.54+
ETHYLBENZENE UG/L	34371 PI	<0.50	<0.50	<0.50	<0.50	<0.50	NA	<0.50	2.0*	<0.50
TOLUENE UG/L	34010 PI	<0.50	<0.50	<0.50	<0.50	<0.50	NA	<0.50	<0.50	0.80+
HYDROCARBONS,PETRO MG/L	45501 I	0.15	0.093	0.78	<0.091	0.11	0.16	<0.091	0.12	4.2
LEAD,TOTAL MG/L	1051A GFAA	0.0086	<0.0031	<0.0031	<0.0031	0.0043	<0.0031	<0.0031	<0.0031	<0.0031
PH,FIELD STD UNITS	400 0	5.70	5.60	7.00	6.90	5.70	NA	6.00	5.70	7.10
SP.COND.,FILLD@25C UMHOS/CM	94 0	143	58.0	352	261	237	NA	330	293	1370
WATER TEMP C	10 0	28.1	26.5	29.6	28.8	28.8	NA	27.9	25.8	24.8
D.O.,PROBE MG/L	299 0	NA	NA	NA	NA	NA	NA	NA	NA	3.8

* Single column quantification , unable to confirm by second column due to interference.
# Single column quantification ,second column confirmation was not conducted
\+ First column quantification , second column confirmation
** Field Duplicate

FIELD GROUP
TYNDALL - 3

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PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL3 PROJECT MANAGER RANDY SCHULZE
Z5RX LAB COORDINATOR DAVE KNOTHE

PARAMETERS / UNITS	STORET # / METHOD	SAMPLE ID/# GTS-1 TYNDL3 1	GTS-2 TYNDL3 2	GTS-3 TYNDL3 3	GTSQA** TYNDL3 4
DATE		10/13/86	10/13/86	10/13/86	10/13/86
TIME		11:40	11:35	12:00	00:00
BROMODICHLOROMETHANE UG/L	32101 HA	<0.050	<0.050	0.070*	0.060*
BROMOFORM UG/L	32104 HA	<0.050	<0.050	<0.050	<0.050
BROMOMETHANE UG/L	34413 HA	<0.050	<0.050	<0.050	<0.050
CARBON TETRACHLORIDE UG/L	32102 HA	<0.050	<0.050	<0.050	<0.050
CHLOROBENZENE UG/L	34301 HA	<0.050	<0.050	<0.050	<0.050
CHLOROETHANE UG/L	34311 HA	<0.050	<0.050	<0.050	<0.050
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	<0.050	<0.050	<0.050	<0.050
CHLOROFORM UG/L	32106 HA	<0.050	<0.050	0.44*	0.46*
CHLOROMETHANE UG/L	34418 HA	<0.050	<0.050	<0.050	<0.050
DIBROMOCHLOROMETHANE UG/L	32105 HA	<0.050	<0.050	<0.050	<0.050
DICHLOROBENZENE, TOT. UG/L	81524 HA	<0.050	<0.050	<0.050	<0.050
DICHLORODIFLUORO METHANE UG/L	34668 HA	<0.050	<0.050	<0.050	<0.050
1,1-DICHLOROETHANE UG/L	34496 HA	<0.050	<0.050	<0.050	<0.050
1,2-DICHLOROETHANE UG/L	34531 HA	<0.050	<0.050	<0.050	<0.050
1,1-DICHLOROETHYLENE UG/L	34501 HA	<0.050	<0.050	<0.050	<0.050
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	<0.050	<0.050	<0.050	<0.050
1,2-DICHLOROPROPANE UG/L	34541 HA	<0.050	<0.050	<0.050	<0.050
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	<0.050	<0.050	<0.050	<0.050
TRANS-1,3-DICHLORO PROPENE UG/L	34699 HA	<0.050	<0.050	<0.050	<0.050
METHYLENE CHLORIDE UG/L	34423 HA	<0.050	<0.050	<0.050	<0.050

* Single column quantification, unable to confirm by second column due to interference

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL3 PROJECT MANAGER RANDY SCHULZE
Z5RX LAB COORDINATOR DAVE KNOTHE

PARAMETERS / UNITS	STORET # / METHOD	SAMPLE ID/# GTS-1 TYNDL3 1	GTS-2 TYNDL3 2	GTS-3 TYNDL3 3	GTSQA** TYNDL3 4
DATE		10/13/86	10/13/86	10/13/86	10/13/86
TIME		11:40	11:35	12:00	00:00
2,4,6-TRICHL'PHENOL UG/L	34621 FI	<0.4	<0.4	<0.4	<0.4
PH,FIELD STD UNITS	400 0	6.20	6.00	6.40	NA
SP.COND.,FIELD@25C UMHOS/CM	94 0	93.0	105	581	NA
WATER TEMP C	10 0	26.8	27.0	26.2	NA

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\# Single column quantification , second column confirmation was not conducted
\+ First column quantification , second column confirmation.
** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL3 PROJECT MANAGER D.W.KNOTHE
TYNICP LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	SAMPLE ID/# GT5-1 TYNDL3 1	GT5-2 TYNDL3 2	GT5-3 TYNDL3 3	GT5QA** TYNDL3 4
DATE		10/13/86	10/13/86	10/13/86	10/13/86
TIME		11:40	11:35	12:00	00:00
ARSENIC, TOTAL MG/L	1002A ICAP	0.086	0.63	0.20	NA
ANTIMONY, TOTAL MG/L	1097A ICAP	<0.060	<0.060	<0.060	NA
BERYLLIUM, TOTAL MG/L	1012A ICAP	0.014	<0.0010	<0.0010	NA
CADMIUM, TOTAL MG/L	1027A ICAP	<0.0080	<0.0080	<0.0080	NA
CHROMIUM, TOTAL MG/L	1034A ICAP	0.019	0.054	0.028	NA
COPPER, TOTAL MG/L	1042A ICAP	0.0067	0.019	0.014	NA
LEAD, TOTAL MG/L	1051A ICAP	<0.050	<0.050	<0.050	NA
NICKEL, TOTAL MG/L	1067A ICAP	<0.015	0.015	<0.015	NA
SILVER, TOTAL MG/L	1077A ICAP	<0.0060	<0.0060	0.0065	NA
SELENIUM, TOTAL MG/L	1147A ICAP	<0.090	<0.090	<0.090	NA
THALLIUM, TOTAL MG/L	1059A ICAP	<0.037	0.056	<0.037	NA
ZINC, TOTAL MG/L	1092A ICAP	0.009	0.019	0.011	NA
MERCURY, TOTAL MG/L	71900A CVAA	<0.0002	0.0003	<0.0002	NA

** Field Duplicate

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FIELD GROUP
TYNDALL - 4

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ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS:FINAL PAGE# 1

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL4 PROJECT MANAGER RANDY SCHULZE
Z6.10.11R LAB COORDINATOR DAVE KNOTHE

		SAMPLE ID/#													
PARAMETERS UNITS	STORET # METHOD	GT6-1 TYNDL4 1	GT6-2 TYNDL4 2	GT6-3 TYNDL4 3	GT6-4 TYNDL4 4	GT6-5 TYNDL4 5	GT6QA** TYNDL4 6	GT10-1 TYNDL4 7	GT10-2 TYNDL4 8	GT10-3 TYNDL4 9	GT10QA** TYNDL4 10	GT11-1 TYNDL4 11	GT11-2 TYNDL4 12	GT11-3 TYNDL4 13	SWT11-1 TYNDL4 14
DATE		10/16/86	10/16/86	10/16/86	10/21/86	10/21/86	10/21/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/14/86
TIME		14:00	15:40	15:05	10:00	10:45	10:45	10:15	09:40	09:10	09:10	12:00	10:45	11:20	15:20
BROMODICHLOROMETHANE UG/L	32101 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
BROMOFORM UG/L	32104 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<1.0	<0.050
BROMOMETHANE UG/L	34413 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CARBON TETRACHLORIDE UG/L	32102 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CHLOROBENZENE UG/L	34301 HA	<0.050	<0.050	0.24*	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CHLOROETHANE UG/L	34311 HA	<0.050	<0.050	<0.50	<0.050	<0.050	NA	<0.050	0.54+	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<1.0	<0.050
CHLOROFORM UG/L	32106 HA	<0.050	<1.0	<1.0	0.11*	<0.050	NA	<0.050	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	0.050*
CHLOROMETHANE UG/L	34418 HA	<0.050	<0.050	0.11*	<0.050	<0.050	NA	<0.050	<0.050	<0.050	0.10+	<0.050	<0.050	0.49*	<0.050
DIBROMOCHLOROMETHANE UG/L	32105 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.050
DICHLOROBENZENE,TOT. UG/L	81524 HA	<0.050	<0.050	0.41*	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
DICHLORODIFLUORO METHANE UG/L	34668 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-DICHLOROETHANE UG/L	34496 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	10+	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050
1,2-DICHLOROETHANE UG/L	34531 HA	<0.050	0.32+	0.11*	0.070+	<0.050	NA	<0.050	0.080+	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-DICHLOROETHYLENE UG/L	34501 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	0.13+	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	<0.050	0.04*(1)	7.0+	1.1*	0.13*	NA	<0.050	0.17*(2)	<0.050	<0.050	<0.050	<0.050	<0.25	0.22*
1,2-DICHLOROPROPANE UG/L	34541 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.050
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.050
TRANS-1,3-DICHLORO PROPENE UG/L	34699 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.050
METHYLENE CHLORIDE UG/L	34423 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

* Single column quantification, unable to confirm by second column due to interference.
\# Single column quantification, second column confirmation was not conducted.
\+ First column quantification, second column confirmation.
(1)-See footnote #1 at end of analytical data ----(2)-See footnote #2 at end of analytical data
** Field Duplicate

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL4
Z6,10,11R

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	GT6-1 TYNDL4 1	GT6-2 TYNDL4 2	GT6-3 TYNDL4 3	GT6-4 TYNDL4 4	GT6-5 TYNDL4 5	GT6QA** TYNDL4 6	GT10-1 TYNDL4 7	GT10-2 TYNDL4 8	GT10-3 TYNDL4 9	GT10QA** TYNDL4 10	GT11-1 TYNDL4 11	GT11-2 TYNDL4 12	GT11-3 TYNDL4 13	SW111-1 TYNDL4 14
		SAMPLE ID/#													
DATE		10/16/86	10/16/86	10/16/86	10/21/86	10/21/86	10/21/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/14/86
TIME		14:00	15:40	15:05	10:00	10:45	10:45	10 15	09:40	09:10	09:10	12:00	10:45	11:20	15:20
1,1,2,2-TETRACHLORO ETHANE UG/L	34516 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
TETRACHLOROETHENE UG/L	34475 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1-TRICHL'ETHANE UG/L	34506 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-TRICHL'ETHANE UG/L	34511 HA	<0.050	<0.050	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.500	<0.050
TRICHLOROETHENE UG/L	39180 HA	<0.050	0.060+	<0.050	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.45*	0.085+
TRICHL'FLUOROMETHANE UG/L	34488 HA	<0.050	<0.050	0.060*	<0.050	<0.050	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050
VINYL CHLORIDE UG/L	39175 HA	<0.050	0.16*	0.14*(3)	0.24+	0.10*	NA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
BENZENE UG/L	34030 PI	<0.50	94+	260+	6.0+	0.56+	NA	<0.50	34+	<0.50	<0.50	1.7+	<0.50	35+	<0.50
ETHYLBENZENE UG/L	34371 PI	<0.50	2.5*	1.7*	<0.50	<0.50	NA	<0.50	0.85*	<0.50	<0.50	<0.50	<0.50	9.0*	<0.50
TOLUENE UG/L	34010 PI	<0.50	<0.50	5+	1.0*	1.0+	NA	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12+	0.61*
4-CHL'-3-METH'PHENOL UG/L	34452 FI	<11	<11	<21	<11	<11	NA	<5.3	<6.4	<1.1	<1.1	<11	<5.3	<11	<11
2-CHLOROPHENOL UG/L	34586 FI	<4	<4	<9	<4	<4	NA	<2	<4	<0.4	<0.4	<4	<2	<4	<4
2,4-DICHLOROPHENOL UG/L	34601 FI	<11	<11	<22	<4	<4	NA	<2	<4	<0.4	<0.4	<4	<2	<4	<11
2,4-DIMETHYLPHENOL UG/L	34606 FI	<4	<4	<8	<4	<4	NA	<2	<1	<0.4	<0.4	<4	<2	<4	<4
2,4-DINITROPHENOL UG/L	34616 FI	<63	<63	<130	<40	<40	NA	<20	<32	<4	<4	<40	<20	<40	<63
2-METHYL-4,6-DINITRO PHENOL UG/L	34657 FI	<20	<20	<40	<10	<10	NA	<5	<8	<1	<1	<10	<5	<10	<20
2-NITROPHENOL UG/L	34591 FI	<10	<10	<21	<4	<4	NA	<2	<3	<0.4	<0.4	<4	<2	<4	<10
4-NITROPHENOL UG/L	34646 FI	<41	<41	<82	<41	<41	NA	<21	<33	<4	<4	<41	<21	<41	<41
PENTACHLOROPHENOL UG/L	39032 FI	<40	<40	<80	<4	<4	NA	<2	<3	<0.4	<0.4	<4	<2	<4	<40
PHENOL UG/L	34694 FI	<4	<4	<8	<10	<10	NA	<5	<8	<1	<1	<10	<5	<10	<4

* Single column quantification , unable to confirm by second column due to interference.
# Single column quantification , second column confirmation was not conducted.
+ First column quantification , second column confirmation.
(3)-See footnote #3 at end of analtical data
** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL4 PROJECT MANAGER RANDY SCHULZE
Z6.10.11R LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	GT6-1 TYNDL4 1	GT6-2 TYNDL4 2	GT6-3 TYNDL4 3	GT6-4 TYNDL4 4	GT6 5 TYNDL4 5	GT6QA** TYNDL4 6	GT10-1 TYNDL4 7	GT10-2 TYNDL4 8	GT10-3 TYNDL4 9	GT10QA** TYNDL4 10	GT11-1 TYNDL4 11	GT11-2 TYNDL4 12	GT11-3 TYNDL4 13	SWT11-1 TYNDL4 14
DATE		10/16/86	10/16/86	10/16/86	10/21/86	10/21/86	10/21/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/20/86	10/14/86
TIME		14:00	15:40	15:05	10:00	10:45	10:45	10:15	09:40	09:10	09:10	12:00	10:45	11:20	15:20
2,4,6-TRICHL'PHENOL UG/L	34621 FI	<4	<4	<8	<4	<4	NA	<2	<3	<0.4	<0.4	<4	<2	<4	<4
HYDROCARBONS,PETRO MG/L	45501 I	0.13	<0.10	4.9	<0.093	0.80	0.12	<0.092	<0.092	<0.092	<0.092	<0.092	0.12	<0.092	0.26
LEAD,TOTAL MG/L	1051A GFAA	<0.0031	0.017	0.023	0.0043	0.0032	0.0043	0.022	<0.0031	<0.0031	<0.0031	0.056	0.029	<0.0031	<0.0031
PH,FIELD STD UNITS	400 0	6.00	4.80	5.90	6.20	5.60	NA	6.40	5.40	5.20	NA	4.90	5.30	6.50	7.00
SP.COND.,FIELD@25C UMHOS/CM	94 0	92.0	61.0	302	379	142	NA	453	152	57.0	NA	159	236	906	2700
WATER TEMP C	10 0	23.7	23.8	23.5	26.9	24.1	NA	25.2	24.6	24.9	NA	25.4	25.0	25.1	26.3
D.O.,PROBE MG/L	299 0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.4

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\+ First column quantification , second column confirmation.
** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL4 PROJECT MANAGER RANDY SCHULZE
Z6.10.11R LAB COORDINATOR DAVE KNOTHE

PARAMETERS / UNITS	STORET # / METHOD	SAMPLE ID/# SWT11-2 TYNDL4 15
DATE		10/14/86
TIME		15:40
BROMODICHLOROMETHANE UG/L	32101 HA	<0.050
BROMOFORM UG/L	32104 HA	<0.050
BROMOMETHANE UG/L	34413 HA	<0.050
CARBON TETRACHLORIDE UG/L	32102 HA	<0.050
CHLOROBENZENE UG/L	34301 HA	<0.050
CHLOROETHANE UG/L	34311 HA	<0.050
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	<0.050
CHLOROFORM UG/L	32106 HA	0.05*
CHLOROMETHANE UG/L	34418 HA	<0.050
DIBROMOCHLOROMETHANE UG/L	32105 HA	<0.050
DICHLOROBENZENE, TOT. UG/L	81524 HA	<0.050
DICHLORODIFLUORO METHANE UG/L	34668 HA	<0.050
1,1-DICHLOROETHANE UG/L	34496 HA	<0.050
1,2-DICHLOROETHANE UG/L	34531 HA	<0.050
1,1-DICHLOROETHYLENE UG/L	34501 HA	<0.050
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	0.18*
1,2-DICHLOROPROPANE UG/L	34541 HA	<0.050
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	<0.050
TRANS-1,3-DICHLORO PROPENE UG/L	34699 HA	<0.050
METHYLENE CHLORIDE UG/L	34423 HA	<0.050

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** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL4 PROJECT MANAGER RANDY SCHULZE
.6.10.11R LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	SAMPLE ID/# SWT11-2 TYNDL4 15
DATE		10/14/86
TIME		15:40
1,1,2,2-TETRACHLORO ETHANE UG/L	34516 HA	<0.050
TETRACHLOROETHENE UG/L	34475 HA	<0.050
1,1,1-TRICHL'ETHANE UG/L	34506 HA	<0.050
1,1,2-TRICHL'ETHANE UG/L	34511 HA	<0.050
TRICHLOROETHENE UG/L	39180 HA	0.080+
TRICHL'FLUOROMETHANE UG/L	34488 HA	<0.050
VINYL CHLORIDE UG/L	39175 HA	<0.050
BENZENE UG/L	34030 PI	<0.50
ETHYLBENZENE UG/L	34371 PI	0.84*
TOLUENE UG/L	34010 PI	<0.50
4-CHL'-3-METH'PHENOL UG/L	34452 FI	<15
2-CHLOROPHENOL UG/L	34586 FI	<6
2,4-DICHLOROPHENOL UG/L	34601 FI	<16
2,4-DIMETHYLPHENOL UG/L	34606 FI	<5
2,4-DINITROPHENOL UG/L	34616 FI	<89
2-METHYL-4,6-DINITRO PHENOL UG/L	34657 FI	<29
2-NITROPHENOL UG/L	34591 FI	<15
4-NITROPHENOL UG/L	34646 FI	<59
PENTACHLOROPHENOL UG/L	39032 FI	<57
PHENOL UG/L	34694 FI	<6

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** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL4 PROJECT MANAGER RANDY SCHULZE
26.10.11R LAB COORDINATOR DAVE KNOTHE

PARAMETERS / UNITS	STORET # / METHOD	SAMPLE ID/# SWT11-2 TYNDL4 15
DATE		10/14/86
TIME		15:40
2,4,6-TRICHL'PHENOL UG/L	34621 F1	<6
HYDROCARBONS,PETRO MG/L	45501 1	0.23
LEAD,TOTAL MG/L	1051A GFAA	<0.0031
PH,FIELD STD UNITS	400 0	6.80
SP.COND.,FIELD@25C UMHOS/CM	94 0	2680
WATER TEMP C	10 0	27.1
D.O.,PROBE MG/L	299 0	2.2

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** Field Duplicate

FIELD GROUP
TYNDALL - 5

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PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER RANDY SCHULZE
Z78RX LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	GT7-1 TYNDL5 1	GT7-2 TYNDL5 2	GT7-3 TYNDL5 3	GT7 QA** TYNDL5 4	GT8-1 TYNDL5 5	GT8-3 TYNDL5 6	GT8-4 TYNDL5 7	GT8QA** TYNDL5 8	BWT7-11 TYNDL5 9
DATE		10/10/86	10/09/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86	10/09/86
TIME		08:45	12:30	10:15	10:15	11:30	13:55	13:03	13:55	14:50
BROMODICHLOROMETHANE UG/L	32101 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
BROMOFORM UG/L	32104 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
BROMOMETHANE UG/L	34413 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CARBON TETRACHLORIDE UG/L	32102 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CHLOROBENZENE UG/L	34301 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	3.4*
CHLOROETHANE UG/L	34311 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
CHLOROFORM UG/L	32106 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.090+	<0.050	0.080*
CHLOROMETHANE UG/L	34418 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.10+	<0.050	<0.050
DIBROMOCHLOROMETHANE UG/L	32105 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
DICHLORODIFLUORO METHANE UG/L	34668 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-DICHLOROETHANE UG/L	34496 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-DICHLOROETHANE UG/L	34531 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-DICHLOROETHYLENE UG/L	34501 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	<0.050	<0.050	<0.050	<0.050	0.17*	<0.050	<0.050	<0.050	<0.050
1,2-DICHLOROPROPANE UG/L	34541 HA	<0.050	<0.050	<0.050	<0.050	0.065+	<0.050	<0.050	<0.050	<0.050
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
TRANS-1,3-DICHLORO PROPENE UG/L	34699 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
METHYLENE CHLORIDE UG/L	34423 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-TETRACHLORO ETHANE UG/L	34516 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

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** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER RANDY SCHULZE
Z78RX LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	GT7-1 TYNDL5 1	GT7-2 TYNDL5 2	GT7-3 TYNDL5 3	GT7-QA** TYNDL5 4	GT8-1 TYNDL5 5	GT8-3 TYNDL5 6	GT8-4 TYNDL5 7	GT8QA** TYNDL5 8	BWT7-11 TYNDL5 9
DATE		10/10/86	10/09/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86	10/09/86
TIME		08:45	12:30	10:15	10:15	11:30	13:55	13:03	13:55	14:50
TETRACHLOROETHENE UG/L	34475 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1-TRICHL'ETHANE UG/L	34506 HA	<0.050	<0.050	<0.050	0.060*	<0.050	<0.050	<0.050	<0.050	0.060+
1,1,2-TRICHL'ETHANE UG/L	34511 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
TRICHLOROETHENE UG/L	39180 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
TRICHL'FLUOROMETHANE UG/L	34488 HA	<0.050	<0.050	<0.050	<0.050	0.12+	<0.050	<0.050	<0.050	<0.050
VINYL CHLORIDE UG/L	39175 HA	<0.050	<0.050	<0.050	<0.050	0.12*	<0.050	<0.050	<0.050	<0.050
BENZENE UG/L	34030 PI	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
ETHYLBENZENE UG/L	34371 PI	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
TOLUENE UG/L	34010 PI	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
ACENAPHTHENE UG/L	34205 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
ACENAPHTHYLENE UG/L	34200 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
ANTHRACENE UG/L	34220 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
BENZIDINE UG/L	39120 GMS	<2.1	<2.1	<2.1	NA	<2.1	<2.1	<2.1	<2.1	<2.1
BENZO(A)ANTHRACENE UG/L	34526 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
BENZO(B)FLUORANTHENE UG/L	34230 GMS	<1.5	<1.5	<1.5	NA	<1.5	<1.5	<1.5	<1.5	<1.5
BENZO(K)FLUORANTHENE UG/L	34242 GMS	<1.5	<1.5	<1.5	NA	<1.5	<1.5	<1.5	<1.5	<1.5
BENZO(A)PYRENE UG/L	34247 GMS	<1.5	<1.5	<1.5	NA	<1.5	<1.5	<1.5	<1.5	<1.5
BENZO(GHI)PERYLENE UG/L	34521 GMS	<2.0	<2.0	<2.0	NA	<2.0	<2.0	<2.0	<2.0	<2.0
BUTYLBENZYLPHTHALATE UG/L	34292 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
BIS(2-CHLOROETHYL) ETHER UG/L	34273 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0

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** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER RANDY SCHULZE
Z78RX LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	GT7-1 TYNDL5 1	GT7-2 TYNDL5 2	GT7-3 TYNDL5 3	GT7-QA** TYNDL5 4	GT8-1 TYNDL5 5	GT8-3 TYNDL5 6	GT8-4 TYNDL5 7	GT8QA** TYNDL5 8	BWT7-11 TYNDL5 9
DATE		10/10/86	10/09/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86	10/09/86
TIME		08:45	12:30	10:15	10:15	11:30	13:55	13:03	13:55	14:50
BIS(2-CHLOROETHOXY) METHANE UG/L	34278 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
BIS(2-ETHYLHEXYL) PHTHALATE UG/L	39100 GMS	<1.0	<1.0	52	NA	3.6	11	4.5	9.5	6.6
BIS(2-CHL'ISOPROPYL) ETHER UG/L	34283 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
4-BROMOPHENYLPHENYL ETHER UG/L	34636 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
2-CHLORONAPHTHALENE UG/L	34581 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
2-CHLOROPHENOL UG/L	34586 GMS	<1.7	<1.7	<1.7	NA	<1.7	<1.7	<1.7	<1.7	<1.7
4-CHLORO-3-METHYL PHENOL UG/L	34452 GMS	<1.4	<1.4	<1.4	NA	<1.4	<1.4	<1.4	<1.4	<1.4
4-CHLOROPHENYLPHENYL ETHER UG/L	34641 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
CHRYSENE UG/L	34320 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
DIBEN'(A,H)ANTH'CENE UG/L	34556 GMS	<2.0	<2.0	<2.0	NA	<2.0	<2.0	<2.0	<2.0	<2.0
DI-N-BUTYLPHTHALATE UG/L	39110 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
1,3 DICHLOROBENZENE UG/L	34566 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-DICHLOROBENZENE UG/L	34536 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-DICHLOROBENZENE UG/L	34571 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
3,3'-DICHL'BENZIDINE UG/L	34631 GMS	<1.5	<1.5	<1.5	NA	<1.5	<1.5	<1.5	<1.5	<1.5
2,4-DICHLOROPHENOL UG/L	34601 GMS	<1.4	<1.4	<1.4	NA	<1.4	<1.4	<1.4	<1.4	<1.4
DIETHYLPHTHALATE UG/L	34336 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
2,4 DIMETHYLPHENOL UG/L	34606 GMS	<1.4	<1.4	<1.4	NA	<1.4	<1.4	<1.4	<1.4	<1.4
DIMETHYLPTHALATE UG/L	34341 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
2,4-DINITROPHENOL UG/L	34616 GMS	<30	<30	<30	NA	<30	<30	<30	<30	<30

** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER RANDY SCHULZE
Z78RX LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	GT7-1 TYNDL5 1	GT7-2 TYNDL5 2	GT7-3 TYNDL5 3	GT7-QA** TYNDL5 4	GT8-1 TYNDL5 5	GT8-3 TYNDL5 6	GT8-4 TYNDL5 7	GT8QA** TYNDL5 8	BWT7-11 TYNDL5 9
DATE		10/10/86	10/09/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86	10/09/86
TIME		08:45	12:30	10:15	10:15	11:30	13:55	13:03	13:55	14:50
2,4-DINITROTOLUENE UG/L	34611 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
2,6-DINITROTOLUENE UG/L	34626 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
DI-N-OCTYLPHTHALATE UG/L	34596 GMS	<1.1	<1.1	1.4	NA	<1.1	<1.1	2.2	<1.1	<1.1
FLUORANTHENE UG/L	34376 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
FLUORENE UG/L	34381 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
HEXACHLOROBENZENE UG/L	39700 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
HEXACHLOROBUTADIENE UG/L	34391 GMS	<1.1	<1.1	<1.1	NA	<1.1	<1.1	<1.1	<1.1	<1.1
HEXACHLOROCYCLOPENTADIENE UG/L	34386 GMS	<2.0	<2.0	<2.0	NA	<2.0	<2.0	<2.0	<2.0	<2.0
HEXACHLOROETHANE UG/L	34396 GMS	<1.5	<1.5	<1.5	NA	<1.5	<1.5	<1.5	<1.5	<1.5
INDENO(1,2,3-CD)PYRENE UG/L	34403 GMS	<2.0	<2.0	<2.0	NA	<2.0	<2.0	<2.0	<2.0	<2.0
ISOPHORONE UG/L	34408 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
2-METHYL-4,6-DINITROPHENOL UG/L	34657 GMS	<5.0	<5.0	<5.0	NA	<5.0	<5.0	<5.0	<5.0	<5.0
NAPHTHALENE UG/L	34696 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
NITROBENZENE UG/L	34447 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
2-NITROPHENOL UG/L	34591 GMS	<1.4	<1.4	<1.4	NA	<1.4	<1.4	<1.4	<1.4	<1.4
4-NITROPHENOL UG/L	34646 GMS	<5.0	<5.0	<5.0	NA	<5.0	<5.0	<5.0	<5.0	<5.0
N-NITROSODIMET'AMINE UG/L	34438 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
N-NITROSODI-N-PROPYLAMINE UG/L	34428 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
N-NITROSODIPHE'AMINE UG/L	34433 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
PENTACHLOROPHENOL UG/L	39032 GMS	<10	<10	<10	NA	<10	<10	<10	<10	<10

** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER RANDY SCHULZE
Z78RX LAB COORDINATOR DAVE KNOTHE

PARAMETERS / UNITS	STORET # / METHOD	GT7-1 TYNDL5 1	GT7-2 TYNDL5 2	GT7-3 TYNDL5 3	GT7-QA** TYNDL5 4	GT8-1 TYNDL5 5	GT8-3 TYNDL5 6	GT8-4 TYNDL5 7	GT8QA** TYNDL5 8	BWT7-11 TYNDL5 9
		SAMPLE ID/#								
DATE		10/10/86	10/09/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86	10/09/86
TIME		08:45	12:30	10:15	10:15	11:30	13:55	13:03	13:55	14:50
PHENANTHRENE UG/L	34461 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
PHENOL UG/L	34694 GMS	<1.3	<1.3	<1.3	NA	<1.3	<1.3	<1.3	<1.3	<1.3
PYRENE UG/L	34469 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-TRICH'BENZENE UG/L	34551 GMS	<1.0	<1.0	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0
2,4,6-TRICHL'PHENOL UG/L	34621 GMS	<1.8	<1.8	<1.8	NA	<1.8	<1.8	<1.8	<1.8	<1.8
PH,FIELD STD UNITS	400 0	5.70	5.50	4.80	NA	6.30	5.80	5.80	NA	7.90
SP.COND.,FIELD@25C UMHOS/CM	94 0	66.0	69.0	98.0	NA	720	353	185	NA	1310
WATER TEMP C	10 0	26.2	27.7	25.9	NA	25.0	25.1	25.8	NA	23.7
DDT,PP' UG/L	39300 GMS	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7
BHC,A UG/L	39337 GMS	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
BHC,B UG/L	39338 GMS	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
BHC-D UG/L	34259 GMS	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
BHC,G(LINDANE) UG/L	39340 GMS	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1
CHLORDANE UG/L	39350 GMS	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1
DDD,PP' UG/L	39310 GMS	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7
DDE,PP' UG/L	39320 GMS	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7
DDT,PP' UG/L	39300 GMS	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7
DIELDRIN UG/L	39380 GMS	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7	<4.7
ENDOSULFAN,A UG/L	34361 GMS	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
ENDOSULFAN,B UG/L	34356 GMS	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6

** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER RANDY SCHULZE
Z78RX LAB COORDINATOR DAVE KNOTHE

PARAMETERS / UNITS	STORET # / METHOD	GT7-1 TYNDL5 1	GT7-2 TYNDL5 2	GT7-3 TYNDL5 3	GT7-QA** TYNDL5 4	GT8-1 TYNDL5 5	GT8-3 TYNDL5 6	GT8-4 TYNDL5 7	GT8QA** TYNDL5 8	BMT7-11 TYNDL5 9
						SAMPLE ID/#				
DATE		10/10/86	10/09/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86	10/09/86
TIME		08:45	12:30	10:15	10:15	11:30	13:55	13:03	13:55	14:50
ENDOSULFAN SULFATE UG/L	34351 GMS	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6
ENDRIN UG/L	39390 GMS	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6
ENDRIN ALDEHYDE UG/L	34366 GMS	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6	<7.6
HEPTACHLOR UG/L	39410 GMS	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9
HEPTACHLOR EPOXIDE UG/L	39420 GMS	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2	<2.2
PCB-1016 UG/L	34671 GMS	<30	<30	<30	<30	<30	<30	<30	<30	<30
PCB-1221 UG/L	39488 GMS	<30	<30	<30	<30	<30	<30	<30	<30	<30
PCB-1232 UG/L	39492 GMS	<30	<30	<30	<30	<30	<30	<30	<30	<30
PCB-1242 UG/L	39496 GMS	<30	<30	<30	<30	<30	<30	<30	<30	<30
PCB 1248 UG/L	39500 GMS	<30	<30	<30	<30	<30	<30	<30	<30	<30
PCB-1254 UG/L	39504 GMS	<36	<36	<36	<36	<36	<36	<36	<36	<36
PCB-1260 UG/L	39508 GMS	<40	<40	<40	<40	<40	<40	<40	<40	<40
TOXAPHENE UG/L	39400 GMS	<60	<60	<60	<60	<60	<60	<60	<60	<60

** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER D.W.KNOTHE
TYNICP LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	GT7-1 TYNDL5 1	GT7-2 TYNDL5 2	GT7-3 TYNDL5 3	GT7 QA** TYNDL5 4	GT8 1 TYNDL5 5	GT8-3 TYNDL5 6	GT8-4 TYNDL5 7	GT8QA** TYNDL5 8	BWT7-11 TYNDL5 9
DATE		10/10/86	10/09/86	10/10/86	10/10/86	10/16/86	10/17/86	10/23/86	10/17/86	10/09/86
TIME		08:45	12:30	10:15	10.15	11:30	13:55	13:03	13:55	14:50
ARSENIC, TOTAL MG/L	1002A ICAP	<0.060	0.065	0.069	<0.060	<0.060	<0.060	0.061	<0.060	<0.060
ANTIMONY, TOTAL MG/L	1097A ICAP	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
BERYLLIUM, TOTAL MG/L	1012A ICAP	0.0087	0.011	0.0054	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
CADMIUM, TOTAL MG/L	1027A ICAP	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080	<0.0080
CHROMIUM, TOTAL MG/L	1034A ICAP	<0.0060	0.015	0.017	<0.0060	<0.0060	<0.0060	0.014	<0.0060	<0.0060
COPPER, TOTAL MG/L	1042A ICAP	<0.0060	<0.0060	<0.0060	<0.0060	0.0108	<0.0060	<0.0060	<0.0060	<0.0060
LEAD, TOTAL MG/L	1051A ICAP	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NICKEL, TOTAL MG/L	1067A ICAP	<0.015	0.016	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
SILVER, TOTAL MG/L	1077A ICAP	<0.0060	<0.0060	<0.0060	<0.0060	0.0075	0.0059	0.0063	0.0060	<0.0060
SELENIUM, TOTAL MG/L	1147A ICAP	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090	<0.090
THALLIUM, TOTAL MG/L	1059A ICAP	<0.037	<0.037	<0.037	<0.037	<0.041	<0.041	<0.027	<0.041	0.062
ZINC, TOTAL MG/L	1092A ICAP	<0.0030	<0.0030	0.0051	<0.0030	0.040	0.011	0.038	0.0049	0.0034
MERCURY, TOTAL MG/L	71900A CVAA	<0.0002	<0.0002	<0.0002	<0.0002	<0.002	<0.002	<0.002	0.0003	<0.0002

** Field Duplicate

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FIELD GROUP
TYNDALL - 6

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ENVIRONMENTAL SCIENCE & ENGINEERING 05/02/87 STATUS:FINAL PAGE# 1

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL6 PROJECT MANAGER RANDY SCHULZE
Z3,9R LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	GT3-1 TYNDL6 1	GT3-2 TYNDL6 2	GT3-3 TYNDL6 3	GT3-4 TYNDL6 4	GT3-5 TYNDL6 5	GT3-6 TYNDL6 6	GT3-7 TYNDL6 7	GT3QA** TYNDL6 8	GT9-1 TYNDL6 9	GT9-2 TYNDL6 10	GT9-3 TYNDL6 11	GT9-4 TYNDL6 12	GT9QA** TYNDL6 13
DATE		10/15/86	10/15/86	10/15/86	10/16/86	10/17/86	10/17/86	10/23/86	10/17/86	10/13/86	10/13/86	10/21/86	10/21/86	10/21/86
TIME		10:50	11:10	11:55	10:45	11:45	12:30	12:20	11:45	14:10	14:48	13:10	12:15	12:15
BROMODICHLOROMETHANE UG/L	32101 HA	<0.050	<0.050	<0.050	<0.050	0.050+	<0.050	<0.050	0.080+	<0.050	<0.050	<0.050	<0.050	NA
BROMOFORM UG/L	32104 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
BROMOMETHANE UG/L	34413 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
CARBON TETRACHLORIDE UG/L	32102 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
CHLOROBENZENE UG/L	34301 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
CHLOROETHANE UG/L	34311 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
CHLOROFORM UG/L	32106 HA	<0.050	<0.050	<0.050	<0.050	0.43+	<0.050	<0.050	0.48+	<0.050	0.050+	<0.050	<0.050	NA
CHLOROMETHANE UG/L	34418 HA	<0.050	0.050+	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
DIBROMOCHLOROMETHANE UG/L	32105 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
DICHLOROBENZENE, TOT. UG/L	81524 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
DICHLORODIFLUORO METHANE UG/L	34668 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
1,1-DICHLOROETHANE UG/L	34496 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
1,2-DICHLOROETHANE UG/L	34531 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.60+	<0.050	<0.050	<0.050	NA
1,1-DICHLOROETHYLENE UG/L	34501 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.25*	<0.050	<0.050	0.37*	NA
1,2-DICHLOROPROPANE UG/L	34541 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050+	<0.050	<0.050	<0.050	NA
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
TRANS-1,3-DICHLORO PROPENE UG/L	34699 HA	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
METHYLENE CHLORIDE UG/L	34423 HA	<0.050	0.20+	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA

* Single column quantification, unable to confirm by second column due to interference.
\# Single column quantification, second column confirmation was not conducted.
\+ First column quantification, second column confirmation.
** Field Duplicate

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL6 PROJECT MANAGER RANDY SCHULZE
Z3.9R LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT3-1 TYNDL6 1	GT3-2 TYNDL6 2	GT3-3 TYNDL6 3	GT3-4 TYNDL6 4	GT3-5 TYNDL6 5	GT3-6 TYNDL6 6	GT3-7 TYNDL6 7	GT3QA** TYNDL6 8	GT9-1 TYNDL6 9	GT9-2 TYNDL6 10	GT9-3 TYNDL6 11	GT9-4 TYNDL6 12	GT9QA** TYNDL6 13
DATE		10/15/86	10/15/86	10/15/86	10/16/86	10/17/86	10/17/86	10/23/86	10/17/86	10/13/86	10/13/86	10/21/86	10/21/86	10/21/86
TIME		10:50	11:10	11:55	10:45	11:45	12:30	12:20	11:45	14:10	14:48	13:10	12:15	12:15
1,1,2,2-TETRACHLORO	34516	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
ETHANE UG/L	HA													
TETRACHLOROETHENE	34475	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
UG/L	HA													
1,1,1-TRICHL'ETHANE	34506	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.050+	<0.050	<0.050	<0.050	NA
UG/L	HA													
1,1,2-TRICHL'ETHANE	34511	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
UG/L	HA													
TRICHLOROETHENE	39180	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
UG/L	HA													
TRICHL'FLUOROMETHANE	34488	<0.050	<0.050	<0.050	<0.050	<0.050	0.090+	<0.050	0.050*	<0.050	<0.050	<0.050	<0.050	NA
UG/L	HA													
VINYL CHLORIDE	39175	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NA
UG/L	HA													
BENZENE	34030	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	12#	<0.50	<0.50	270+	NA
UG/L	PI													
ETHYLBENZENE	34371	<0.50	<0.50	<0.50	<0.50	1.6*	<0.50	<0.50	0.56*	3.7#	<0.50	<5.0	140+	NA
UG/L	PI													
TOLUENE	34010	<0.50	<0.50	<0.50	<0.50	3.7+	<0.50	<0.50	<0.50	3.2#	<0.50	<0.50	140+	NA
UG/L	PI													
XYLENES, TOTAL	81551	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	46#	9.3#	<5.0	1500*	NA
UG/L	PI													
1,2-DIBROMOETHANE	77651	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
(EDB) UG/L	EC													
HYDROCARBONS, PETRO	45501	0.16	<0.09	<0.10	<0.10	0.19	<0.10	<0.09	<0.09	<0.18	0.17	0.59	6.0	NA
MG/L	I													
LEAD, TOTAL	1051A	0.014	0.024	0.17	0.025	<0.0031	0.027	0.015	<0.0031	0.026	<0.0031	0.0086	0.033	NA
MG/L	GFAA													
PH, FIELD	400	6.00	6.00	6.20	6.60	6.10	6.40	5.40	NA	4.60	4.90	5.80	5.10	NA
STD UNITS	0													
SP. COND., FIELD@25C	94	144	167	183	320	308	330	74.0	NA	84.0	98.0	107	83.0	NA
UMHOS/CM	0													
WATER TEMP	10	26.7	26.1	25.2	25.8	26.6	27.0	26.4	NA	26.9	27.2	28.4	28.2	NA
C	0													

* Single column quantification, unable to confirm by second column due to interference
\# Single column quantification, second column confirmation was not conducted
\+ First column quantification, second column confirmation
** Field Duplicate

FIELD GROUP
TYNDALL - 7

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PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL7 PROJECT MANAGER RANDY SCHULZE
SZ2.11R LAB COORDINATOR DAVE KNOTHE

PARAMETERS / UNITS	STORET # / METHOD	SAMPLE ID/# SDT11-1 TYNDL7 1	SDT11-2 TYNDL7 2	SDT2-1 TYNDL7 3
DATE		10/14/86	10/14/86	10/14/86
TIME		13:40	13:30	13:40
HYDROCARBONS, PETROL MG/KG	98233A I	170	75	35000
LEAD, SED MG/KG	1052A GFAA	5.1	3.2	98
MOISTURE %WET WT	70320 I	26.4	27.7	43.8
BENZENE MG/KG	34237A GMS	<0.30	<0.30	<0.39
BROMODICHLOROMETHANE MG/KG	34330A GMS	<0.15	<0.15	<0.20
BROMOFORM MG/KG	34290A GMS	<0.32	<0.33	<0.42
BROMOMETHANE MG/KG	34416A GMS	<0.39	<0.40	<0.52
CARBON TETRACHLORIDE MG/KG	34299A GMS	<0.19	<0.19	<0.25
CHLOROBENZENE MG/KG	34304A GMS	<0.41	<0.41	<0.53
CHLOROETHANE MG/KG	34314A GMS	<0.56	<0.57	<0.73
2-CHLOROETHYLVINYL ETHER MG/KG	34579A GMS	<0.68	<0.69	<0.89
CHLOROFORM MG/KG	34318A GMS	<0.11	<0.11	<0.14
CHLOROMETHANE MG/KG	34421A GMS	<0.29	<0.30	<0.38
DIBROMOCHLOROMETHANE MG/KG	34309A GMS	<0.21	<0.21	<0.28
DICHLOROBENZENE, TOTAL MG/KG	98578A GMS	<0.27	<0.28	<0.36
1,1-DICHLOROETHANE MG/KG	34499A GMS	<0.32	<0.33	<0.42
1,2 DICHLOROETHANE MG/KG	34534A GMS	<0.19	<0.19	<0.25
1,1 DICHLOROETHYLENE MG/KG	34504A GMS	<0.22	<0.22	<0.28
TRANS-1,2-DICHLORO ETHENE MG/KG	34549A GMS	<0.11	<0.11	<0.14
1,2-DICHLOROPROPANE MG/KG	34544A GMS	<0.41	<0.41	<0.53

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL7 PROJECT MANAGER RANDY SCHULZE
SZ2.11R LAB COORDINATOR DAVE KNOTHE

PARAMETERS UNITS	STORET # METHOD	SDT11-1 TYNDL7 1	SDT11-2 TYNDL7 2	SDT2-1 TYNDL7 3
		SAMPLE ID/#		
DATE		10/14/86	10/14/86	10/14/86
TIME		13:40	13:30	13:40
CIS-1,3-DICHLORO PROPENE MG/KG	34702A GMS	<0.34	<0.35	<0.44
TRANS-1,3-DICHLORO PROPENE MG/KG	34697A GMS	<0.43	<0.44	<0.57
ETHYLBENZENE MG/KG	34374A GMS	<0.49	<0.50	<0.64
METHYLENE CHLORIDE MG/KG	34426A GMS	<0.19	<0.19	<0.25
1,1,2,2-TETRACHLORO ETHANE MG/KG	34519A GMS	<0.28	<0.28	<0.36
TETRACHLOROETHENE MG/KG	34478A GMS	<0.28	<0.28	<0.36
TOLUENE MG/KG	34483A GMS	<0.41	<0.41	<0.53
1,1,1-TRICHL'ETHANE MG/KG	34509A GMS	<0.26	<0.26	<0.34
1,1,2-TRICHL'ETHANE MG/KG	34514A GMS	<0.34	<0.35	<0.44
TRICHLOROETHENE MG/KG	34487A GMS	<0.13	<0.13	<0.17
TRICHLOROFLUOROMETHANE MG/KG	34491A GMS	<0.22	<0.22	<0.28
VINYL CHLORIDE MG/KG	34495A GMS	<0.33	<0.34	<0.44
M-XYLENE MG/KG	97016A GMS	<0.41	<0.41	<0.53
O,P-XYLENE MG/KG	97017A GMS	<0.41	<0.41	<0.53
ACROLEIN, SED MG/KG	34213A GMS	<6.8	<6.9	<8.9
ACRYLONITRILE, SED MG/KG	34218A GMS	<6.8	<6.9	<8.9

Footnotes to Analytical Results

[1]Primary columnn indicates 3.8 μg/L of total 1,2-Dichloroethene, however, the secondary column shows the peak to probably be Cis 1,2-Dichloroethene which is a non-target compound.

[2]Primary column indicates 12 μg/L of total 1,2-Dichloroethene, however, the secondary column shows the major portion of the peak to probably be Cis 1,2-Dichloroethene while confirming a level of 0.17 μg/L of Trans 1,2-Dichloroethene.

[3]Vinyl Chloride co-elutes with Dichlorodifluoromethene on the primary column. The second column indicates the major peak to be probably Dichlorodifluoromethene and a second peak to be either Vinyl Chloride or Chloromethane or both, making confirmation of either impossible. There is a response on the PID on the primary column indicating a probable presence of Vinyl Chloride, but as stated above, the hit cannot be confirmed.

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ANALYTICAL RESULTS OF FIELD DUPLICATES
COLLECTED AT TYNDALL AFB

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ENVIRONMENTAL SCIENCE & ENGINEERING 05/07/87 STATUS: PAGE# 1

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL2 PROJECT MANAGER RANDY SCHULZE
ZONE2R LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GLH2QA TYNDL2 6	GLH2-9 TYNDL2 8
DATE		10/22/86	10/22/86
TIME		13:15	11:10
BROMODICHLOROMETHANE UG/L	32101 HA	NA	<0.050
BROMOFORM UG/L	32104 HA	NA	<0.050
BROMOMETHANE UG/L	34413 HA	NA	<0.050
CARBON TETRACHLORIDE UG/L	32102 HA	NA	<0.050
CHLOROBENZENE UG/L	34301 HA	NA	<0.050
CHLOROETHANE UG/L	34311 HA	NA	<0.050
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	NA	<0.050
CHLOROFORM UG/L	32106 HA	NA	<0.050
CHLOROMETHANE UG/L	34418 HA	NA	<0.050
DIBROMOCHLOROMETHANE UG/L	32105 HA	NA	<0.050
DICHLOROBENZENE, TOT. UG/L	81524 HA	NA	<0.050
DICHLORODIFLUORO METHANE UG/L	34668 HA	NA	<0.050
1,1-DICHLOROETHANE UG/L	34496 HA	NA	<0.050
1,2-DICHLOROETHANE UG/L	34531 HA	NA	<0.050
1,1-DICHLOROETHYLENE UG/L	34501 HA	NA	<0.050
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	NA	<0.050
1,2-DICHLOROPROPANE UG/L	34541 HA	NA	<0.050
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	NA	<0.050
TRANS-1,3-DICHLORO PROPENE UG/L	34699 HA	NA	<0.050
METHYLENE CHLORIDE UG/L	34423 HA	NA	<0.050

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL2 PROJECT MANAGER RANDY SCHULZE
ZONE2R LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS / UNITS	STORET # / METHOD	GLH2QA TYNDL2 6	GLH2-9 TYNDL2 8
DATE		10/22/86	10/22/86
TIME		13:15	11:10
1,1,2,2-TETRACHLORO ETHANE UG/L	34516 HA	NA	<0.050
TETRACHLOROETHENE UG/L	34475 HA	NA	<0.050
1,1,1-TRICHL'ETHANE UG/L	34506 HA	NA	<0.050
1,1,2-TRICHL'ETHANE UG/L	34511 HA	NA	<0.050
TRICHLOROETHENE UG/L	39180 HA	NA	<0.050
TRICHL'FLUOROMETHANE UG/L	34488 HA	NA	<0.050
VINYL CHLORIDE UG/L	39175 HA	NA	<0.050
BENZENE UG/L	34030 PI	NA	<0.50
ETHYLBENZENE UG/L	34371 PI	NA	2.00*
TOLUENE UG/L	34010 PI	NA	<0.50
HYDROCARBONS,PETRO MG/L	45501 1	0.159	0.226
LEAD,TOTAL MG/L	1051A GFAA	<0.0031	<0.0031
PH,FIELD STD UNITS	400 0	NA	5.79
SP.COND.,FIELD@25C UMHOS/CM	94 0	NA	293
WATER TEMP C	10 0	NA	25.8
D.O.,PROBE MG/L	299 0	NA	NA

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL3
25HX

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS / UNITS	STORET # / METHOD	GTS-3 TYNDL3 3	GT5QA TYNDL3 4
DATE		10/13/86	10/13/86
TIME		12:00	00:00
BROMODICHLOROMETHANE UG/L	32101 HA	0.070 †	0.060 †
BROMOFORM UG/L	32104 HA	<0.050	<0.050
BROMOMETHANE UG/L	34413 HA	<0.050	<0.050
CARBON TETRACHLORIDE UG/L	32102 HA	<0.050	<0.050
CHLOROBENZENE UG/L	34301 HA	<0.050	<0.050
CHLOROETHANE UG/L	34311 HA	<0.050	<0.050
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	<0.050	<0.050
CHLOROFORM UG/L	32106 HA	0.440 †	0.460 †
CHLOROMETHANE UG/L	34418 HA	<0.050	<0.050
DIBROMOCHLOROMETHANE UG/L	32105 HA	<0.050	<0.050
DICHLOROBENZENE, TOT. UG/L	81524 HA	<0.050	<0.050
DICHLORODIFLUORO METHANE UG/L	34668 HA	<0.050	<0.050
1,1-DICHLOROETHANE UG/L	34496 HA	<0.050	<0.050
1,2-DICHLOROETHANE UG/L	34531 HA	<0.050	<0.050
1,1-DICHLOROETHYLENE UG/L	34501 HA	<0.050	<0.050
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	<0.050	<0.050
1,2-DICHLOROPROPANE UG/L	34541 HA	<0.050	<0.050
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	<0.050	<0.050
TRANS-1,3-DICHLORO PROPENE UG/L	34699 HA	<0.050	<0.050
METHYLENE CHLORIDE UG/L	34423 HA	<0.050	<0.050

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL3 PROJECT MANAGER RANDY SCHULZE
258X LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT5-3 TYNDL3 3	GT5QA TYNDL3 4
DATE		10/13/86	10/13/86
TIME		12:00	00:00
1,1,2,2-TETRACHLORO ETHANE UG/L	34516 HA	<0.050	<0.050
TETRACHLOROETHENE UG/L	34475 HA	<0.050	<0.050
1,1,1-TRICHL'ETHANE UG/L	34506 HA	<0.050	<0.050
1,1,2-TRICHL'ETHANE UG/L	34511 HA	<0.050	<0.050
TRICHLOROETHENE UG/L	39180 HA	<0.050	<0.050
TRICHL'FLUOROMETHANE UG/L	34488 HA	<0.050	<0.050
VINYL CHLORIDE UG/L	39175 HA	<0.050	<0.050
BENZENE UG/L	34030 PI	<0.50	<0.50
ETHYLBENZENE UG/L	34371 PI	<0.50	<0.50
TOLUENE UG/L	34010 PI	<0.50	<0.50
4-CHL'-3-METH'PHENOL UG/L	34452 FI	<0.42	<0.42
2-CHLOROPHENOL UG/L	34586 FI	<0.4	<0.4
2,4-DICHLOROPHENOL UG/L	34601 FI	<0.4	<0.4
2,4-DIMETHYLPHENOL UG/L	34606 FI	<0.4	<0.4
2,4-DINITROPHENOL UG/L	34616 FI	<4	<4
2-METHYL-4,6-DINITRO PHENOL UG/L	34657 FI	<1	<1
2 NITROPHENOL UG/L	34591 FI	<0.4	<0.4
4 NITROPHENOL UG/L	34646 FI	<2	<2
PENTACHLOROPHENOL UG/L	39032 FI	<1	<1
PHENOL UG/L	34694 FI	<0.4	<0.4

PROJECT NUMBER 86449 0000 PROJECT NAME - TYNDALL AFB
FIELD GROUP TYNDL3 PROJECT MANAGER RANDY SCHULZE
Z5RX LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS / UNITS	STORET # / METHOD	GT5-3 TYNDL3 3	GT5QA TYNDL3 4
DATE		10/13/86	10/13/86
TIME		12.00	00.00
2,4,6-TRICHL'PHENOL	34621	<0.4	<0.4
UG/L	F1		
PH,FIELD	400	6.40	NA
STD UNITS	0		
SP.COND.,FIELD@25C	94	581	NA
UMHOS/CM	0		
WATER TEMP	10	26.2	NA
C	0		

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL4
26.10.11R

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT6-4 TYNDL4 4	GT6QA TYNDL4 6	GT10-3 TYNDL4 9	GT10QA TYNDL4 10
DATE		10/21/86	10/21/86	10/20/86	10/20/86
TIME		10:00	10:45	09:10	09:10
BROMODICHLOROMETHANE UG/L	32101 HA	<0.050	NA	<0.050	<0.050
BROMOFORM UG/L	32104 HA	<0.050	NA	<0.050	<0.050
BROMOMETHANE UG/L	34413 HA	<0.050	NA	<0.050	<0.050
CARBON TETRACHLORIDE UG/L	32102 HA	<0.050	NA	<0.050	<0.050
CHLOROBENZENE UG/L	34301 HA	<0.050	NA	<0.050	<0.050
CHLOROETHANE UG/L	34311 HA	<0.050	NA	<0.050	<0.050
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	<0.050	NA	<0.050	<0.050
CHLOROFORM UG/L	32106 HA	0.11 *	NA	<0.050	<0.050
CHLOROMETHANE UG/L	34418 HA	<0.050	NA	<0.050	0.10 †
DIBROMOCHLOROMETHANE UG/L	32105 HA	<0.050	NA	<0.050	<0.050
DICHLOROBENZENE, TOT. UG/L	81524 HA	<0.050	NA	<0.050	<0.050
DICHLORODIFLUORO METHANE UG/L	34668 HA	<0.050	NA	<0.150	<0.050
1,1-DICHLOROETHANE UG/L	34496 HA	<0.050	NA	<0.050	<0.050
1,2-DICHLOROETHANE UG/L	34531 HA	0.070 †	NA	<0.150	<0.050
1,1-DICHLOROETHYLENE UG/L	34501 HA	<0.050	NA	<0.150	<0.050
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	1.1 *	NA	<0.150	<0.050
1,2-DICHLOROPROPANE UG/L	34541 HA	<0.050	NA	<0.050	<0.050
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	<0.050	NA	<0.050	<0.050
TRANS-1,3-DICHLORO PROPENE UG/L	34699 HA	<0.050	NA	<0.050	<0.050
METHYLENE CHLORIDE UG/L	34423 HA	<0.050	NA	<0.050	<0.050

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL4 PROJECT MANAGER RANDY SCHULZE
Z6 10 FIR LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT6-4 TYNDL4 4	GT6QA TYNDL4 6	GT10-3 TYNDL4 9	GT10QA TYNDL4 10
DATE		10/21/86	10/21/86	10/20/86	10/20/86
TIME		10:00	10:45	09:10	09:10
1,1,2,2-TETRACHLORO ETHANE UG/L	34516 HA	<0.050	NA	<0.050	<0.050
TETRACHLOROETHENE UG/L	34475 HA	<0.050	NA	<0.050	<0.050
1,1,1-TRICHL'ETHANE UG/L	34506 HA	<0.050	NA	<0.050	<0.050
1,1,2-TRICHL'ETHANE UG/L	34511 HA	<0.050	NA	<0.050	<0.050
TRICHLOROETHENE UG/L	39180 HA	<0.050	NA	<0.050	<0.050
TRICHL'FLUOROMETHANE UG/L	34488 HA	<0.050	NA	<0.050	<0.050
VINYL CHLORIDE UG/L	39175 HA	0.24 †	NA	<0.050	<0.050
BENZENE UG/L	34030 PI	6.0 †	NA	<0.50	<0.50
ETHYLBENZENE UG/L	34371 PI	<0.50	NA	<0.50	<0.50
TOLUENE UG/L	34010 PI	1.1 *	NA	<0.50	<0.50
4-CHL'-3-METH'PHENOL UG/L	34452 FI	<11	NA	<1.1	<1.1
2-CHLOROPHENOL UG/L	34586 FI	<4	NA	<0.4	<0.4
2,4-DICHLOROPHENOL UG/L	34601 FI	<4	NA	<0.4	<0.4
2,4-DIMETHYLPHENOL UG/L	34606 FI	<4	NA	<0.4	<0.4
2,4-DINITROPHENOL UG/L	34616 FI	<40	NA	<4	<4
2-METHYL-4,6-DINITRO PHENOL UG/L	34657 FI	<10	NA	<1	<1
2-NITROPHENOL UG/L	34591 FI	<4	NA	<0.4	<0.4
4-NITROPHENOL UG/L	34646 FI	<41	NA	<4	<4
PENTACHLOROPHENOL UG/L	39032 FI	<4	NA	<0.4	<0.4
PHENOL UG/L	34694 FI	<10	NA	<1	<1

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL4 PROJECT MANAGER RANDY SCHULZE
26 10, 11R LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS / UNITS	STORET # / METHOD	GT6 4 TYNDL4 4	GT60A TYNDL4 6	GT10 3 TYNDL4 9	GT10A TYNDL4 10
DATE		10/21/86	10/21/86	10/20/86	10/20/86
TIME		10:00	10:45	09:10	09:10
2,4,6-TRICHL'PHENOL UG/L	34621 F1	<4	NA	<0.4	<0.4
HYDROCARBONS,PETRO MG/L	45501 1	<0.093	0.117	0.122	0.139
LEAD,TOTAL MG/L	1051A GFAA	0.0043	0.0043	<0.0031	<0.0031
PH,FIELD STD UNITS	400 0	6.20	NA	5.20	NA
SP.COND.,FIELD@25C UMHOS/CM	94 0	379	NA	57.0	NA
WATER TEMP C	10 0	26.9	NA	24.9	NA
D.O.,PROBE MG/L	299 0	NA	NA	NA	NA

ENVIRONMENTAL SCIENCE & ENGINEERING 05/07/87 STATUS: PAGE# 1

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER RANDY SCHULZE
27BRX LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT7 1 TYNDL5 1	GT7 QA TYNDL5 4	GT8 3 TYNDL5 6	GT8QA TYNDL5 8
DATE		10/10/86	10/10/86	10/17/86	10/17/86
TIME		08:45	10:15	13:55	13:55
BROMODICHLOROMETHANE UG/L	32101 HA	<0.050	<0.050	<0.050	<0.050
BROMOFORM UG/L	32104 HA	<0.050	<0.050	<0.050	<0.050
BROMOMETHANE UG/L	34413 HA	<0.050	<0.050	<0.050	<0.050
CARBON TETRACHLORIDE UG/L	32102 HA	<0.050	<0.050	<0.050	<0.050
CHLOROBENZENE UG/L	34301 HA	<0.050	<0.050	<0.050	<0.050
CHLOROETHANE UG/L	34311 HA	<0.050	<0.050	<0.050	<0.050
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	<0.050	<0.050	<0.050	<0.050
CHLOROFORM UG/L	32106 HA	<0.050	<0.050	<0.050	<0.050
CHLOROMETHANE UG/L	34418 HA	<0.050	<0.050	<0.050	<0.050
DIBROMOCHLOROMETHANE UG/L	32105 HA	<0.050	<0.050	<0.050	<0.050
DICHLORODIFLUORO METHANE UG/L	34668 HA	<0.050	<0.050	<0.050	<0.050
1,1-DICHLOROETHANE UG/L	34496 HA	<0.050	<0.050	<0.050	<0.050
1,2 DICHLOROETHANE UG/L	34531 HA	<0.050	<0.050	<0.050	<0.050
1,1-DICHLOROETHYLENE UG/L	34501 HA	<0.050	<0.050	<0.050	<0.050
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	<0.050	<0.050	<0.050	<0.050
1,2 DICHLOROPROPANE UG/L	34541 HA	<0.050	<0.050	<0.050	<0.050
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	<0.050	<0.050	<0.050	<0.050
TRANS-1,3 DICHLORO PROPENE UG/L	34699 HA	<0.050	<0.050	<0.050	<0.050
METHYLENE CHLORIDE UG/L	34423 HA	<0.050	<0.050	<0.050	<0.050
1,1,2,2-TETRACHLORO ETHANE UG/L	34516 HA	<0.050	<0.050	<0.050	<0.050

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER RANDY SCHULZE
278RX LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT7-1 TYNDL5 1	GT7-QA TYNDL5 4	GT8 3 TYNDL5 6	GT8QA TYNDL5 8
DATE		10/10/86	10/10/86	10/17/86	10/17/86
TIME		08:45	10:15	13:55	13:55
TETRACHLOROETHENE UG/L	34475 HA	<0.050	<0.050	<0.050	<0.050
1,1,1-TRICHL'ETHANE UG/L	34506 HA	<0.050	0.06 *	<0.050	<0.050
1,1,2-TRICHL'ETHANE UG/L	34511 HA	<0.050	<0.050	<0.050	<0.050
TRICHLOROETHENE UG/L	39180 HA	<0.050	<0.050	<0.050	<0.050
TRICHL'FLUOROMETHANE UG/L	34488 HA	<0.050	<0.050	<0.050	<0.050
VINYL CHLORIDE UG/L	39175 HA	<0.050	<0.050	<0.050	<0.050
BENZENE UG/L	34030 PI	<0.50	<0.50	<0.50	<0.50
ETHYLBENZENE UG/L	34371 PI	<0.50	<0.50	<0.50	<0.50
TOLUENE UG/L	34010 PI	<0.50	<0.50	<0.50	<0.50
ACENAPHTHENE UG/L	34205 GMS	<1.0	NA	<1.0	<1.0
ACENAPHTHYLENE UG/L	34200 GMS	<1.0	NA	<1.0	<1.0
ANTHRACENE UG/L	34220 GMS	<1.0	NA	<1.0	<1.0
BENZIDINE UG/L	39120 GMS	<2.1	NA	<2.1	<2.1
BENZO(A)ANTHRACENE UG/L	34526 GMS	<1.0	NA	<1.0	<1.0
BENZO(B)FLUORANTHENE UG/L	34230 GMS	<1.5	NA	<1.5	<1.5
BENZO(K)FLUORANTHENE UG/L	34242 GMS	<1.5	NA	<1.5	<1.5
BENZO(A)PYRENE UG/L	34247 GMS	<1.5	NA	<1.5	<1.5
BENZO(GHI)PERYLENE UG/L	34521 GMS	<2.0	NA	<2.0	<2.0
BUTYLBENZYLPHTHALATE UG/L	34292 GMS	<1.0	NA	<1.0	<1.0
BIS(2-CHLOROETHYL) ETHER UG/L	34273 GMS	<1.0	NA	<1.0	<1.0

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL5
Z78RX

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT7-1 TYNDL5 1	GT7-QA TYNDL5 4	GT8-3 TYNDL5 6	GT8QA TYNDL5 8
DATE		10/10/86	10/10/86	10/17/86	10/17/86
TIME		08:45	10:15	13:55	13:55
BIS(2-CHLOROETHOXY) METHANE UG/L	34278 GMS	<1.0	NA	<1.0	<1.0
BIS(2-ETHYLHEXYL) PHTHALATE UG/L	39100 GMS	<1.0	NA	11	9.5
BIS(2-CHL'ISOPROPYL) ETHER UG/L	34283 GMS	<1.0	NA	<1.0	<1.0
4-BROMOPHENYLPHENYL ETHER UG/L	34636 GMS	<1.0	NA	<1.0	<1.0
2-CHLORONAPHTHALENE UG/L	34581 GMS	<1.0	NA	<1.0	<1.0
2-CHLOROPHENOL UG/L	34586 GMS	<1.7	NA	<1.7	<1.7
4-CHLORO-3-METHYL PHENOL UG/L	34452 GMS	<1.4	NA	<1.4	<1.4
4-CHLOROPHENYLPHENYL ETHER UG/L	34641 GMS	<1.0	NA	<1.0	<1.0
CHRYSENE UG/L	34320 GMS	<1.0	NA	<1.0	<1.0
DIBEN'(A,H)ANTH'CENE UG/L	34556 GMS	<2.0	NA	<2.0	<2.0
DI-N-BUTYLPHTHALATE UG/L	39110 GMS	<1.0	NA	<1.0	<1.0
1,3,DICHLOROBENZENE UG/L	34566 GMS	<1.0	NA	<1.0	<1.0
1,2-DICHLOROBENZENE UG/L	34536 GMS	<1.0	NA	<1.0	<1.0
1,4-DICHLOROBENZENE UG/L	34571 GMS	<1.0	NA	<1.0	<1.0
3,3'-DICHL'BENZIDINE UG/L	34631 GMS	<1.5	NA	<1.5	<1.5
2,4-DICHLOROPHENOL UG/L	34601 GMS	<1.4	NA	<1.4	<1.4
DIETHYLPHTHALATE UG/L	34336 GMS	<1.0	NA	<1.0	<1.0
2,4-DIMETHYLPHENOL UG/L	34606 GMS	<1.4	NA	<1.4	<1.4
DIMETHYLPTHALATE UG/L	34341 GMS	<1.0	NA	<1.0	<1.0
2,4-DINITROPHENOL UG/L	34616 GMS	<30	NA	<30	<30

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDLS PROJECT MANAGER RANDY SCHULZE
Z78RX LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT7-1 TYNDLS 1	GT7-QA TYNDLS 4	GT8-3 TYNDLS 6	GT8QA TYNDLS 8
DATE		10/10/86	10/10/86	10/17/86	10/17/86
TIME		08:45	10:15	13:55	13:55
2,4-DINITROTOLUENE UG/L	34611 GMS	<1.0	NA	<1.0	<1.0
2,6-DINITROTOLUENE UG/L	34626 GMS	<1.0	NA	<1.0	<1.0
DI-N-OCTYLPHTHALATE UG/L	34596 GMS	<1.1	NA	<1.1	<1.1
FLUORANTHENE UG/L	34376 GMS	<1.0	NA	<1.0	<1.0
FLUORENE UG/L	34381 GMS	<1.0	NA	<1.0	<1.0
HEXACHLOROBENZENE UG/L	39700 GMS	<1.0	NA	<1.0	<1.0
HEXACHLOROBUTADIENE UG/L	34391 GMS	<1.1	NA	<1.1	<1.1
HEXACHLOROCYCLOPENTA DIENE UG/L	34386 GMS	<2.0	NA	<2.0	<2.0
HEXACHLOROETHANE UG/L	34396 GMS	<1.5	NA	<1.5	<1.5
INDENO(1,2,3-CD) PYRENE UG/L	34403 GMS	<2.0	NA	<2.0	<2.0
ISOPHORONE UG/L	34408 GMS	<1.0	NA	<1.0	<1.0
2-METHYL-4,6-DINITRO PHENOL UG/L	34657 GMS	<5.0	NA	<5.0	<5.0
NAPHTHALENE UG/L	34696 GMS	<1.0	NA	<1.0	<1.0
NITROBENZENE UG/L	34447 GMS	<1.0	NA	<1.0	<1.0
2-NITROPHENOL UG/L	34591 GMS	<1.4	NA	<1.4	<1.4
4-NITROPHENOL UG/L	34646 GMS	<5.0	NA	<5.0	<5.0
N-NITROSODIMETHAMINE UG/L	34438 GMS	<1.0	NA	<1.0	<1.0
N-NITROSODI-N-PROPYL AMINE UG/L	34428 GMS	<1.0	NA	<1.0	<1.0
N-NITROSODIPHENYLAMINE UG/L	34433 GMS	<1.0	NA	<1.0	<1.0
PENTACHLOROPHENOL UG/L	39032 GMS	<10	NA	<10	<10

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER RANDY SCHULZE
Z78RX LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT7-1 TYNDL5 1	GT7-QA TYNDL5 4	GT8-3 TYNDL5 6	GT8QA TYNDL5 8
DATE		10/10/86	10/10/86	10/17/86	10/17/86
TIME		08 45	10:15	13:55	13:55
PHENANTHRENE UG/L	34461 GMS	<1.0	NA	<1.0	<1.0
PHENOL UG/L	34694 GMS	<1.3	NA	<1.3	<1.3
PYRENE UG/L	34469 GMS	<1.0	NA	<1.0	<1.0
1,2,4-TRICH'BENZENE UG/L	34551 GMS	<1.0	NA	<1.0	<1.0
2,4,6-TRICHL'PHENOL UG/L	34621 GMS	<1.8	NA	<1.8	<1.8
PH,FIELD STD UNITS	400 0	5.70	NA	5.80	NA
SP.COND.,FIELD@25C UMHOS/CM	94 0	66.0	NA	353	NA
WATER TEMP C	10 0	26.2	NA	25.1	NA
DDT,PP' UG/L	39300 GMS	<4.7	<4.7	<4.7	<4.7
BHC,A UG/L	39337 GMS	<3.1	<3.1	<3.1	<3.1
BHC,B UG/L	39338 GMS	<3.1	<3.1	<3.1	<3.1
BHC-D UG/L	34259 GMS	<3.1	<3.1	<3.1	<3.1
BHC,G(LINDANE) UG/L	39340 GMS	<3.1	<3.1	<3.1	<3.1
CHLORDANE UG/L	39350 GMS	<5.1	<5.1	<5.1	<5.1
DDD,PP' UG/L	39310 GMS	<4.7	<4.7	<4.7	<4.7
DDE,PP' UG/L	39320 GMS	<4.7	<4.7	<4.7	<4.7
DDT,PP' UG/L	39300 GMS	<4.7	<4.7	<4.7	<4.7
DIELDRIN UG/L	39380 GMS	<4.7	<4.7	<4.7	<4.7
ENDOSULFAN,A UG/L	34361 GMS	<5.6	<5.6	<5.6	<5.6
ENDOSULFAN,B UG/L	34356 GMS	<5.6	<5.6	<5.6	<5.6

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL5 PROJECT MANAGER RANDY SCHULZE
Z7BRX LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT7-1 TYNDL5 1	GT7-QA TYNDL5 4	GT8-3 TYNDL5 6	GT8QA TYNDL5 8
DATE		10/10/86	10/10/86	10/17/86	10/17/86
TIME		08:45	10:15	13:55	13:55
ENDOSULFAN SULFATE UG/L	34351 GMS	<5.6	<5.6	<5.6	<5.6
ENDRIN UG/L	39390 GMS	<7.6	<7.6	<7.6	<7.6
ENDRIN ALDEHYDE UG/L	34366 GMS	<7.6	<7.6	<7.6	<7.6
HEPTACHLOR UG/L	39410 GMS	<1.9	<1.9	<1.9	<1.9
HEPTACHLOR EPOXIDE UG/L	39420 GMS	<2.2	<2.2	<2.2	<2.2
PCB-1016 UG/L	34671 GMS	<30	<30	<30	<30
PCB-1221 UG/L	39488 GMS	<30	<30	<30	<30
PCB-1232 UG/L	39492 GMS	<30	<30	<30	<30
PCB-1242 UG/L	39496 GMS	<30	<30	<30	<30
PCB 1248 UG/L	39500 GMS	<30	<30	<30	<30
PCB-1254 UG/L	39504 GMS	<36	<36	<36	<36
PCB-1260 UG/L	39508 GMS	<40	<40	<40	<40
TOXAPHENE UG/L	39400 GMS	<60	<60	<60	<60

ENVIRONMENTAL SCIENCE & ENGINEERING 05/07/87 STATUS: PAGE# 1

PROJECT NUMBER 86449 0000
FIELD GROUP TYNDL6
Z3.9R

PROJECT NAME TYNDALL AFB
PROJECT MANAGER RANDY SCHULZE
LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT3-5 TYNDL6 5	GT3QA TYNDL6 8	GT9-3 TYNDL6 11	GT9QA TYNDL6 13
DATE		10/17/86	10/17/86	10/21/86	10/21/86
TIME		11:45	11:45	13:10	12:15
BROMODICHLOROMETHANE UG/L	32101 HA	0.050 †	0.080 †	<0.050	NA
BROMOFORM UG/L	32104 HA	<0.050	<0.050	<0.050	NA
BROMOMETHANE UG/L	34413 HA	<0.050	<0.050	<0.050	NA
CARBON TETRACHLORIDE UG/L	32102 HA	<0.050	<0.050	<0.050	NA
CHLOROBENZENE UG/L	34301 HA	<0.050	<0.050	<0.050	NA
CHLOROETHANE UG/L	34311 HA	<0.050	<0.050	<0.050	NA
2-CHLOROETHYLVINYL ETHER UG/L	34576 HA	<0.050	<0.050	<0.050	NA
CHLOROFORM UG/L	32106 HA	0.43 †	0.48 †	<0.050	NA
CHLOROMETHANE UG/L	34418 HA	<0.050	<0.050	<0.050	NA
DIBROMOCHLOROMETHANE UG/L	32105 HA	<0.050	<0.050	<0.050	NA
DICHLOROBENZENE,TOT. UG/L	81524 HA	<0.050	<0.050	<0.050	NA
DICHLORODIFLUORO METHANE UG/L	34668 HA	<0.050	<0.050	<0.050	NA
1,1-DICHLOROETHANE UG/L	34496 HA	<0.050	<0.050	<0.050	NA
1,2-DICHLOROETHANE UG/L	34531 HA	<0.050	<0.050	<0.050	NA
1,1-DICHLOROETHYLENE UG/L	34501 HA	<0.050	<0.050	<0.050	NA
TRANS-1,2-DICHLORO ETHENE UG/L	34546 HA	<0.050	<0.050	<0.050	NA
1,2-DICHLOROPROPANE UG/L	34541 HA	<0.050	<0.050	<0.050	NA
CIS-1,3-DICHLORO PROPENE UG/L	34704 HA	<0.050	<0.050	<0.050	NA
TRANS-1,3-DICHLORO PROPENE UG/L	34699 HA	<0.050	<0.050	<0.050	NA
METHYLENE CHLORIDE UG/L	34423 HA	<0.050	<0.050	<0.050	NA

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDL6 PROJECT MANAGER RANDY SCHULZE
Z3.9R LAB COORDINATOR DAVE KNOTHE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	GT3-5 TYNDL6 5	GT3QA TYNDL6 8	GT9-3 TYNDL6 11	GT9QA TYNDL6 13
DATE		10/17/86	10/17/86	10/21/86	10/21/86
TIME		11:45	11:45	13:10	12:15
1,1,2,2-TETRACHLORO ETHANE UG/L	34516 HA	<0.050	<0.050	<0.050	NA
TETRACHLOROETHENE UG/L	34475 HA	<0.050	<0.050	<0.050	NA
1,1,1-TRICHL'ETHANE UG/L	34506 HA	<0.050	<0.050	<0.050	NA
1,1,2-TRICHL'ETHANE UG/L	34511 HA	<0.050	<0.050	<0.050	NA
TRICHLOROETHENE UG/L	39180 HA	<0.050	<0.050	<0.050	NA
TRICHL'FLUOROMETHANE UG/L	34488 HA	<0.050	0.05 *	<0.050	NA
VINYL CHLORIDE UG/L	39175 HA	<0.050	<0.050	<0.050	NA
BENZENE UG/L	34030 PI	<0.50	<0.50	<0.50	NA
ETHYLBENZENE UG/L	34371 PI	1.6 *	0.56 *	<5.0	NA
TOLUENE UG/L	34010 PI	3.7 †	<0.50	<0.50	NA
XYLENES,TOTAL UG/L	81551 PI	<0.50	<0.50	<5.0	NA
1,2-DIBROMOETHANE (EDB) UG/L	77651 EC	<0.010	<0.010	<0.010	<0.010
HYDROCARBONS,PETRO MG/L	45501 I	0.187	<0.094	0.693	NA
LEAD,TOTAL MG/L	1051A GFAA	<0.0031	<0.0031	0.0086	NA
PH,FIELD STD UNITS	400 0	61.0	NA	5.80	NA
SP.COND.,FIELD@25C UMHOS/CM	94 0	308	NA	107	NA
WATER TEMP C	10 0	26.6	NA	28.4	NA

Code	Technique
I	miscellaneous inorganic techniques
GFAA	graphite furnace atomic absorption
GMS	gas chromatography/mass spectrometry
HA	gas chromatography with a halide-specific detector
PI	gas chromatography with a photoionization detector
Ø	miscellaneous field techniques
FI	gas chromatography with a flame ionization detector
ICAP	inductively coupled argon plasma atomic emission spectrometry
CVAA	cold vapor atomic absorption
EC	gas chromatography with an electron capture detector
MP	metals and pesticides extraction procedure for toxicity characterization

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APPENDIX S

EP TOXICITY DATA FOR DRILL CUTTINGS

FROM ZONE 6 AND 9

PROJECT NUMBER 86449 0000 PROJECT NAME TYNDALL AFB
FIELD GROUP TYNDLS PROJECT MANAGER D.M. HALE
EPMP1 LAB COORDINATOR DILNA HALE

SAMPLE ID/#

PARAMETERS UNITS	STORET # METHOD	SOT9-4 TYNDLS 1	SOT9-3 TYNDLS 2	SOTEP3 TYNDLS 3
DATE		10/05/86	10/05/86	10/15/86
TIME		17:45	15:45	14:00
EP-TOX,DATE OF EXTRACTION	97078 MP	10/14/86	10/14/86	10/21/86
ENDRIN UG/L	39390 EC	<0.133	<0.064	<0.083
BHC,G(LINDANE) UG/L	39340 EC	<0.066	<0.032	<0.041
METHOXYCHLOR UG/L	39480 EC	<0.347	<0.168	<0.217
TOXAPHENE UG/L	39400 EC	<1.57	<0.758	<0.978
2,4-D, TOTAL UG/L	39730 EC	<0.222	<0.222	<0.222
2,4,5-TP/SILVEX UG/L	39760 EC	<0.056	<0.056	<0.056
CADMIUM,DISS MG/L	1025A ICAP	<0.0047	<0.0047	<0.0036
CHROMIUM,DISS MG/L	1030A ICAP	<0.0190	<0.0190	<0.0054
LEAD,DISS MG/L	1049A ICAP	<0.0330	<0.0330	<0.0220
SILVER,DISS MG/L	1075A ICAP	<0.0059	<0.0059	<0.0048
ARSENIC,DISS MG/L	1000A GFAA	0.0041	0.0067	0.0041
MERCURY,DISS. MG/L	71890A CVAA	0.0003	<0.0002	<0.0002
SELENIUM,DISS MG/L	1145A GFAA	<0.0031	<0.0031	<0.0042
BARIUM,DISS MG/L	1005A ICAP	0.161	0.102	0.213

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APPENDIX T

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS

AAFES	Army and Air Force Exchange Service
AFB	Air Force Base
ACMI	Aircraft Control Maneuvering Instrumentation
AFESC	Air Force Engineering and Service Center
AFFFS	aqueous film-forming foams
aquifer	A hydrologic unit that is permeable enough to conduct ground water and to yield economically significant quantities of water.
aquitard	A confining bed that retards but does not prevent the flow of water to or from an adjacent aquifer.
artesian	Ground water confined under hydrostatic pressure.
ASTM	American Society for Testing and Materials
AVGAS	aviation gasoline
BES	Bioenvironmental Services
BOD	biochemical oxygen demand
°C	degrees Celsius
CA	contamination assessment
calcareous	containing calcium carbonate, often implying 50 percent calcium carbonate as a constituent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cm/sec	centimeter(s) per second
CME	Central Mine Equipment
CO	carbon monoxide
CO_2	carbon dioxide
confined aquifer	An aquifer bounded above and below by impermeable beds or beds of distinctly lower permeability than that of the aquifer.
confining bed or unit	A body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.
contaminate plume	Three dimensional space (areal and vertical) having defined boundaries in which contamination is found.
contamination	The addition of any substance or property to water, soil, or air that does not occur naturally or exceeds the naturally occurring concentrations present in the water, soil, or air.
DDT	dichlorodiphenyl trichloroethane
DEQPPM	Defense Environmental Quality Program Policy Memorandum
DFSP	Defense Fuels Supply Point
discharge area	An area in which subsurface water discharges to the land surface, surface water, or to the atmosphere.
DOC	dissolved organic carbon
DOD	Department of Defense

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS
(Continued, Page 2 of 5)

downgradient	Occurring at a lower hydraulic gradient or topographic gradient, especially in reference to ground water or surface water.
DPDO	Defense Property Disposal Office
EDB	ethylene dibromide
electromagnetic (EM) conductivity	A method of electrical surveying in which the ground is energized with direct current through a pair of electrode contacts, and the behavior of the current is surveyed by measuring the resulting magnetic field.
EM	electromagnetic
EP	extraction procedure
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc. (ESE)
estuary	Drainage channels adjacent to the sea in which the tide ebbs and flows.
°F	degrees Fahrenheit
FAC	Florida Administrative Code
FDER	Florida Department of Environmental Regulation
Floridan Aquifer	Primary aquifer in north and central Florida from which large amounts of potable water are derived.
ft	foot (feet)
g	gram
gal	gallon(s)
GC	gas chromatography
GC/MS	gas chromatography/mass spectrophotometer
geomorphology	The study of the classification, description, nature, origin, and development of present (and past) landforms.
gpd	gallon(s) per day
gpm	gallon(s) per minute
GWCI	ground water contamination indicators
H_2O	water
HARM	Hazard Assessment Rating Methodology
hazardous contaminants	Contamination that contains hazardous constituents as defined by the Environmental Protection Agency.
hydraulic gradient	In an aquifer, the rate of change of total head per unit of distance of flow at a given point and in a given direction. In a stream, the slope of the free water surface.
hydrogeology	Science dealing with subsurface waters and with related geologic aspects of surface waters.

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS
(Continued, Page 3 of 5)

ICP	Inductively Coupled Plasma
igneous rock	rock that solidified from molten magma
IR	infrared
IRP	Installation Restoration Program
kg	kilogram(s)
kn	knot(s)
L	liter(s)
lb	pound(s)
leachate	Water that has percolated through soil containing soluble substances and that contains certain amounts of these substances in solution.
lithology	The description of rocks on the basis of color, mineralogic composition, grain size, and other characteristics.
log	A continuous record as a function of depth, usually graphic and plotted to scale, from observations made of the geologic section.
magnetometry	A geophysical method that measures the Earth's magnetic field and its changes.
MCL	maximum contaminant level
metamorphic rock	Rock derived from pre-existing rock by mineralogical, chemical, or structural changes.
mg/day	milligram(s) per day
mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
mmhos/m	millimhos per meter
msl	mean sea level
N_2	nitrogen
NPDES	National Pollutant Discharge Elimination Systems
NPDWR	National Primary Drinking Water Regulations
NSDWR	National Secondary Drinking Water Regulations
O_2	oxygen
OEHL	Occupational and Environmental Health Laboratory
PCB	polychlorinated biphenyl
permeability	The capacity of a porous rock, sediment, or soil to transmit a fluid.
physiographic province	A region of which all parts are similar in geologic structure and the region differs significantly in relief and landforms from that of adjacent regions.
piezometric surface	An imaginary surface that everywhere coincides with the static level of the water in an aquifer.

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS
(Continued, Page 4 of 5)

POL	Petroleum, oils, and lubricants
potable water	Fresh water that is safe and palatable for human use.
potentiometric surface	Surface to which water in an aquifer would rise by hydrostatic pressure.
ppm	parts per million
PVC	polyvinyl chloride
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
recharge	Process involving the absorption and addition of water to the zone of saturation.
recharge area	An area in which water is absorbed that eventually reaches the zone of saturation in one or more aquifers.
RMCL	Recommended Maximum Contaminant Level
runoff	That part of precipitation appearing in surface streams.
saltwater intrusion	Displacement of fresh water (surface or ground water) by the advance of salt water due to its greater density.
sedimentary rock	A rock resulting from the consolidation of loose sediment that has accumulated in layers.
sludge	A semifluid, slushy mass of sediment resulting from treatment of water, sewage, or industrial wastes; a soft, soupy, muddy bottom deposit found on tideland or in a stream bed.
static water level	Water level of a well that is not being affected by withdrawal of ground water.
stratigraphy	Pertaining to rock strata, the science of their origin, geologic history, age relations, composition, form, and distribution.
surficial aquifer	Stratigraphically uppermost aquifer that is under water table conditions.
TAC	Tactical Air Command
TDS	total dissolved solids
terrace	A narrow, gently sloping constructional coastal strip extending seaward or lakeward, and veneered by a sedimentary deposit.
THM	trihalomethane
topography	The relief and contour of the land.
TOX	total organic halogens
transmissivity	The rate at which water is transmitted through a unit width of the aquifer under a unit hydraulic gradient.
TRPH	total recoverable petroleum hydrocarbons

GLOSSARY OF TERMINOLOGY, ABBREVIATIONS, AND ACRONYMS
(Continued, Page 5 of 5)

µg/L	microgram(s) per liter
umhos/cm	micromhos per centimeter
unconfined aquifer	An aquifer having a water table.
upgradient	Occurring at a higher hydraulic gradient or topographic gradient, especially in reference to ground water or surface water.
USAF	U.S. Air Force
USCS	Unified Soil Classification System
USGS	U.S. Geological Survey
USSCS	U.S. Soil Conservation Service
UTM	Universal Transverse Mercator
UV	ultraviolet
WAR	Water and Air Research, Inc.
water table	That surface of a body of unconfined ground water at which the pressure is equal to that of the atmosphere.
watershed	The area contained within a drainage divide above a specified point on a stream.
well yield	Volume of ground water that can be pumped from a well in a unit time.
WWII	World War II

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APPENDIX U

REFERENCES

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